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A REPORT
ON
BARKITECTURE
“Rescue Architecture for Dogs”

Submitted By:

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074-BAE-247

Submitted To:

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Date: April 24, 2023

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CERTIFICATE

This is to certify that this thesis entitled “Barkitecture: Rescue Architecture for Dogs” at Basundhara, Kathmandu submitted by Mr. Yujal Man Singh Pradhan has been examined and has been declared successful for the partial fulfillment of the academic requirement for the completion of the Degree of Bachelor of Architecture.

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To,
The Chairperson and Members of the Jury,
Thesis Committee
Department of Architecture,
Central Campus, Pulchowk,
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Subject: Approval for Final Thesis Presentation

Dear Sir/Madam,

In compliance with the requirement of the course AR 851 (V Year Architectural Design Thesis) for the degree of Bachelor's in Architecture, I hereby respectfully present my thesis for evaluation and approval.

Project Title: **BARKITECTURE: Rescue Architecture for Dogs**

Project Location: **Basundhara, Kathmandu**

Respectfully,

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ABSTRACT

Keywords: disorder, physiology, psychology, acoustics

Dogs have been so integrated into human life over the past few decades that they have literally become a part of our lives. Because dogs are the most dependable and sociable animals on the world, people have domesticated them for use in a variety of settings. This became one of the main drivers of economic growth as well as the improvement of one's physical and mental health. They can help in therapy and treatment of the person suffering from various disorders.

Like people, dogs have a long list of needs based on their physical and psychological characteristics, making it conceivable to construct a home specifically for a dog to live in. This paper would be an effort to build spaces for dogs to improve their relationship with people and the environment. Architecture is all about designing a life. Physiology and Psychology of the dogs are very important factors while considering the design for them. We must also understand how humans, animals and the environment are related to each other and how they interact to create interactive spaces for them. Proper site selection, building layouts and adoption procedures considerations are to be followed while designing the shelter along with the outside landscape as well.

In context of Nepal, research of various dog rescue shelters was conducted regarding the functioning of the facility, the architectural changes due to their behavior, the architectural spaces and the problems existing were studied. The problems are consisting mostly due to the acoustic management and the complaints from the neighbors regarding the noise. With proper application of architectural guidelines, these problems and shortcomings could be avoided. This can create a comfortable environment for the neighbors, staffs, volunteers and the dogs as well.

The design of the dog shelter was done to achieve certain objectives. The design of the dog shelter was done in a site at Basundhara, Kathmandu. The area of the site is 12,322.47 sq. m. (24-03-02-0.75). The shelter which houses a holding space for 150 dogs, aims to provide proper spaces for the healing and rehabilitation of dogs and help them find a new home. The dog shelter was designed considering the present context. It aims to change the "jail-like" feeling associated with most of the currently existing dog shelters. The shelter creates a series of spaces and architectural design considerations obtained from various literature reviews and case studies. Inclusion of various spaces like parking spaces, dog parks can help the project sustain commercially. Inside the shelter contains three main categories of spaces: Living spaces, Healing spaces and Service spaces. The arrangement of these spaces according to zones, functions and flow and giving it a certain form completes the design. The form of the design is inspired from the various levels existing in the site. Structural as well as service considerations have also been done for the design.

CONTENTS

COPYRIGHT	i
CERTIFICATE	ii
DECLARATION	iii
ACKNOWLEDGEMENT	v
ABSTRACT.....	vi
CONTENTS.....	vii
LIST OF FIGURES	xiv
LIST OF TABLES	xix
LIST OF ABBREVIATIONS.....	xx
CHAPTER 1. INTRODUCTION	1
1.1. Background	2
1.2. History.....	3
1.2.2. Origin and Location	4
1.2.3. Present Context	4
1.2.4. Dog Culling.....	6
1.3. Animal Care Facility	6
1.4. Need of the Research.....	7
1.5. Importance of the Research.....	7
1.6. Problem Statement	8
1.7. Objectives.....	9
1.8. Research Questions	10
1.9. Methodology	10
1.10. Expected Output	12
1.11. Scope of the Project.....	12
CHAPTER 2. LITERATURE REVIEW	13
2.1. Overview	14
2.2. Animal Welfare	14
2.2.1. Animal Sentience	15
2.2.2. Animal Welfare in Nepal	16
2.3. Animals' Needs	20
2.4. The Five Freedoms.....	21
2.5. Adoption Procedure.....	22
2.5.1. Incoming Animals.....	22
2.5.2. Adoption	23

2.5.3.	Rehoming	23
2.5.4.	Establishing Shelter Routes	24
2.5.5.	Establishing Shelter Policies	24
2.6.	Physiology and Psychology of Dogs	24
2.7.	Perception of Colors	26
2.8.	Animal Assisted Therapy	28
2.8.1.	Emotional Benefits	28
2.9.	Interrelationship	29
2.9.1.	Human-Animal Interrelationship	29
2.9.2.	Animal-Environment Interrelationship	31
2.9.3.	Human-Environment Interrelationship	31
2.10.	Human Animal Behavior	32
2.10.1.	Interactive Benefits	33
2.11.	Designing the Shelter	33
2.11.1.	Site Selection	34
2.11.2.	General Recommendations for Animal Housing	34
2.11.3.	The Building Layout	35
2.11.4.	Double Compartment Kennels	36
2.12.	Design Goals	39
2.12.1.	For Dogs	39
2.12.2.	For the Staff and Volunteers	40
2.12.3.	For the Public	41
2.13.	Lighting	41
2.13.1.	Importance	41
2.13.2.	Design Considerations	42
2.14.	Landscape for Dogs	43
2.14.1.	Dog Parks	44
2.14.2.	Design Considerations	44
2.15.	Spaces for Healing	47
2.15.1.	Psychology of Space	48
2.15.2.	Teleology of Space	48
2.15.3.	Salutogenesis in Space	49
2.16.	Veterinary Clinic	49
2.16.1.	Design Objectives and Building Regulations	50
2.16.2.	Designing a Veterinary Hospital	52

2.17.	Spaces for Mourning	55
2.17.1.	Pet Loss and Death	56
2.17.2.	Cremation	57
2.18.	Sustainability Approach	57
2.18.1.	Noise Reduction	57
2.18.2.	Layers of Vegetation	58
2.19.	Inferences from Literature Review	59
CHAPTER 3.	CASE STUDY	60
3.1.	Sneha's Care	62
3.1.1.	Overview	62
3.1.2.	Introduction	62
3.1.3.	Reason for Selection	62
3.1.4.	Site and Surroundings	63
3.1.5.	Functional Module	63
3.1.6.	Procedure for Treatment and Care	64
3.1.7.	Adoption Procedure	65
3.1.8.	Design Expression	66
3.1.9.	Miscellaneous	69
3.1.10.	Problems	70
3.1.11.	Analysis	71
3.1.12.	Inferences	72
3.2.	Kathmandu Animal Treatment Center	73
3.2.1.	Overview	73
3.2.2.	Introduction	73
3.2.3.	Reason for Selection	74
3.2.4.	Site and Surroundings	74
3.2.5.	Functional Module	74
3.2.6.	Procedure for Treatment and Care	75
3.2.7.	Adoption Procedure	76
3.2.8.	Design Expression	77
3.2.9.	Miscellaneous	80
3.2.10.	Problems	81
3.2.11.	Analysis	83
3.2.12.	Inferences	84
3.3.	Society for the Prevention of Cruelty to Animals Nepal	85

3.3.1.	Overview	85
3.3.2.	Introduction.....	85
3.3.3.	Reason for Selection	86
3.3.4.	Site and Surroundings	86
3.3.5.	Functional Module	86
3.3.6.	Procedure for Treatment and Care.....	87
3.3.7.	Adoption Procedure	87
3.3.8.	Design Expression	89
3.3.9.	Miscellaneous	91
3.3.10.	Problems.....	92
3.3.11.	Analysis.....	93
3.3.12.	Inferences	94
3.4.	Comparative Analysis of National Case Studies.....	95
3.5.	Vet for Your Pet	97
3.5.1.	Overview.....	97
3.5.2.	Introduction.....	97
3.5.3.	Reason for Selection	97
3.5.4.	Functional Module	98
3.5.5.	Design Expression	99
3.5.6.	Space-Area Analysis.....	101
3.5.7.	Inferences.....	102
3.6.	PAWS- Play and Stay	103
3.6.1.	Overview.....	103
3.6.2.	Introduction.....	103
3.6.3.	Reason for Selection	103
3.6.4.	Functional Module	103
3.6.5.	Design Expression	106
3.6.6.	Miscellaneous	108
3.6.7.	Space-Area Analysis.....	109
3.6.8.	Inferences.....	110
3.7.	Palm Springs Animal Care Facility.....	111
3.7.1.	Overview.....	111
3.7.2.	Introduction.....	111
3.7.3.	Reason for Selection	111
3.7.4.	Concept.....	112

3.7.5.	Functional Module	113
3.7.6.	Design Expression	113
3.7.7.	Inferences	116
3.8.	SPCA- Animal Care Center for Dogs and Cats	117
3.8.1.	Overview	117
3.8.2.	Introduction.....	117
3.8.3.	Reason for Selection	118
3.8.4.	Functional Module	118
3.8.5.	Design Expression	118
3.8.6.	Inferences	123
3.9.	Dogchitecture: Dog Shelter	124
3.9.1.	Overview	124
3.9.2.	Introduction.....	124
3.9.3.	Reason for Selection	124
3.9.4.	Concept	125
3.9.5.	Design Expression	126
3.9.6.	Inferences	128
3.10.	Blue Cross Society.....	129
3.10.1.	Overview	129
3.10.2.	Introduction	129
3.10.3.	Reason for Selection.....	129
3.10.4.	Functional Module	130
3.10.5.	Treatment	131
3.10.6.	Design Expression.....	131
3.10.7.	Inferences	133
3.11.	Comparative Analysis.....	134
CHAPTER 4.	SITE ANALYSIS	137
4.1.	Overview	138
4.2.	Site Selection.....	138
4.3.	Site Surroundings	139
4.4.	Site Consideration Factors	139
4.4.1.	Access	139
4.4.2.	Visibility	139
4.4.3.	Transport.....	139
4.4.4.	Distance from Local Veterinary Clinics and Hospitals	139

4.4.5.	Infrastructures	140
4.5.	Bye- Laws	140
4.6.	Climatic Analysis	141
4.7.	Public Services and Landmarks	142
4.8.	Road and Accessibility	143
4.9.	Visual Analysis	144
4.10.	Figure Ground Analysis.....	146
4.11.	Site Profile and Solar Path.....	146
4.12.	SOWT Analysis	149
CHAPTER 5.	PROGRAM FORMULATION	150
5.1.	Overview	151
5.2.	Initial Program and Zoning	151
5.3.	Calculation for Number of Dogs	152
5.4.	Space Area Distribution	152
5.5.	Calculation of Site Area	155
CHAPTER 6.	DESIGN DEVELOPMENT	156
6.1.	Concept.....	157
6.1.1.	The Process	157
6.1.2.	Internal Courtyards	157
6.1.3.	Kennel Types	158
6.1.4.	Landscape	158
6.1.5.	Dog Friendly Design.....	159
6.2.	Site Considerations.....	160
6.3.	Flow and Adjacency.....	162
6.4.	Functional Zoning	162
6.5.	Design.....	165
6.6.	Form Development.....	167
6.7.	Architectural Expression	168
6.8.	Plan Formation	168
6.9.	Physical Model.....	182
6.10.	Structure and Materials.....	184
6.10.1.	Structure	184
6.10.2.	Materials.....	184
6.11.	Building Services.....	184
6.11.1.	Electricity	184

6.11.2.	Water supply	185
6.11.1.	Sanitation.....	186
6.11.2.	Fire Fighting System	187
CONCLUSION.....		188
REFERENCES		189
ANNEX A.....		193
ANNEX B.....		203

LIST OF FIGURES

Figure 1: Street and Stray Dogs in Thamel.....	2
Figure 2: Location of Dogs Counted During Census.....	3
Figure 3: Golden Retrievers (a and b) and Labrador Retrievers (c and d) of Common Type and Field Type	5
Figure 4: Mass Dog Culling at Chovar	6
Figure 5: Clean Nepal Manages Burial of Dead Animals Inside Kathmandu Valley	8
Figure 6: Pie Chart Showing Problems in Animal Care Shelters	9
Figure 7: Cover Illustration of "Sathi" by Jenny Campbell.....	9
Figure 8: Flowchart Representing Design Methodology	11
Figure 9: Overlapping Animal Welfare Concepts	14
Figure 10: Interaction Between Animals, Clinic, Owners and Community	15
Figure 11: Dog Appreciation in Kukur Tihar	16
Figure 12: Timeline of Welfare Organizations in Nepal	20
Figure 13: Animals' Needs.....	21
Figure 14: The Five Freedoms for Animals.....	22
Figure 15: Animal Rehoming Process	23
Figure 16: Anthropometry of Dogs.....	24
Figure 17: Color Spectrum Visible to Dogs	26
Figure 18: Scene that Depicts What Human See versus What Dogs See	27
Figure 19: Animal-Assisted Therapy.....	28
Figure 20: Child-canine socialization Impact and Significance at Various Age Groups	28
Figure 21: Dog playing with a sick child.....	29
Figure 22: Seating for People and Dogs	29
Figure 23: Punctured Walls for Dogs to Jump and Crawl	30
Figure 24: Olfactory Environmental Information.....	30
Figure 25: Dogs' Park	31
Figure 26: Visibility to Appeal of Destination (Relates to Willingness to Move)	32
Figure 27: Oxytocin Levels Increase with Positive Physical Interaction	33
Figure 28: Individual Dog Housing	35
Figure 29: Group Dog Housing	35
Figure 30: Low Stress Dog Housing- Double Compartment.....	36
Figure 31: Dog Adoption Cages	37
Figure 32: Real Life Rooms for Dogs.....	38
Figure 33: Landscape for Dogs.....	43
Figure 34: Doggie Airlocks	45
Figure 35: Signage at Dog Parks	46
Figure 36: Waste Station.....	46
Figure 37: Healing Theories that Foster and Create Healing Environments	47
Figure 38: Theories, Principles, and Spatial Elements of Healing	47
Figure 39: Window Opening Accommodation for Both Humans and Animals.....	48
Figure 40: The Correlation Between Natural Light Exposure and an Increase in Energy Levels and Interaction	49
Figure 41: Conceptual Identity of Spaces	55

Figure 42: Sequence of Spaces	56
Figure 43: Pet Cremation Incinerator	57
Figure 44: Retaining Wall that can act a Noise Barrier	58
Figure 45: Vegetation as Barriers	58
Figure 46: Sneha's Care Information Board	62
Figure 47: Access Road to the Site	63
Figure 48: Sneha's Care Operating Policies.....	63
Figure 49: Sneha's Care Space Bubble Diagram	64
Figure 50: Sneha's Care Master Plan	65
Figure 51: Sneha's Care Dog Kennels (for Groups)	67
Figure 52: Sneha's Care Dog Shelter for Paralyzed Dogs	67
Figure 53: Sneha's Care Open Field	68
Figure 54: Entrance to Sneha's Care	70
Figure 55: Reception and Clinic Area	70
Figure 56: Entry Pathway	71
Figure 57: KAT Center Information Board	73
Figure 58: Access Road Leading to the Facility	74
Figure 59: Kathmandu Animal Treatment Center Operating Policies.....	74
Figure 60: KAT Space Bubble Diagram.....	75
Figure 61: Kathmandu Animal Treatment Center Master Plan	76
Figure 62: Individual Kennels for Dogs	78
Figure 63: Dog Runs	78
Figure 64: Materials Used in the Facility	79
Figure 65: Access to the Community Forest.....	79
Figure 66: Access Road Leading to the Site	81
Figure 67: KAT Center Roofing System	81
Figure 68: Cement Punning on the Cages and Circulation Spaces.....	82
Figure 69: Temporary CGI Fencing in KAT	82
Figure 70: Isolation Cage Construction Plan for KAT Center	83
Figure 71: SPCA Nepal View from Entrance.....	85
Figure 72: Access Road Leading to the Facility	86
Figure 73: SPCA Nepal Operating Policies.....	86
Figure 74: SPCA Nepal Space Bubble Diagram	88
Figure 75: SPCA Nepal Master Plan	88
Figure 76: SPCA Nepal Group Housing System	89
Figure 77: Kennels for New Dogs	90
Figure 78: Semi-Open Space for Dogs	90
Figure 79: Central Landscape for Dogs	91
Figure 80: Flooring in SPCA Nepal.....	92
Figure 81: Reception and Entry	97
Figure 82: Vet for Your Pet Operating Policies.....	98
Figure 83: Vet for your Pet Plan	98
Figure 84: Vet for Your Pet Space Bubble Diagram	99
Figure 85: Isolation Space	100
Figure 86: Double Compartment Kennels	100
Figure 87: Wet-Lab.....	101

Figure 88: Examination Room.....	101
Figure 89: PAWS- Play and Stay.....	103
Figure 90: Functional Module of PAWS- Play and Stay.....	103
Figure 91: PAWS- Play and Stay Space Bubble Diagram	104
Figure 92: PAWS- Play and Stay Master Plan	104
Figure 93: PAWS- Play and Stay Indoor Plan.....	105
Figure 94: PAWS- Play and Stay Indoor Space Bubble Diagram.....	105
Figure 95: Real Life Rooms.....	106
Figure 96: Landscape at PAWS- Play and Stay.....	107
Figure 97: PAWS Training Ground.....	107
Figure 98: Sound Proofing Brick Walls.....	108
Figure 99: Grooming Space for Dogs.....	109
Figure 100: Bathing Space for Dogs.....	109
Figure 101: Palm Springs Animal Care Facility.....	111
Figure 102: Palm Springs Floor Plan.....	112
Figure 103: Functional Module of Palm Springs Animal Care Center	113
Figure 104: Circulation from Public Intake	114
Figure 105: Space Analysis	115
Figure 106: Circulation Analysis	116
Figure 107: SPCA of Texas	117
Figure 108: Specific Program Components for SPCA of Texas	118
Figure 109: Exterior Components of SPCA of Texas	118
Figure 110: Circulation from Sally Port	119
Figure 111: Circulation within Clinic Zone.....	119
Figure 112: SPCA of Texas Master Plan.....	120
Figure 113: Hierarchy of Zones.....	121
Figure 114: Hierarchy of Spaces.....	122
Figure 115: Dogchitecture Bird's Eye View	124
Figure 116: Dogchitecture Building Design Concept.....	125
Figure 117: Dogchitecture Kennels	126
Figure 118: Dogchitecture Entrance	126
Figure 119: Floor Plan	127
Figure 120: Exterior Interior Connection	127
Figure 121: Dogchitecture Isometric Floor Plan	128
Figure 122: Blue Cross Society, Pune, India	129
Figure 123: Functional Module of Blue Cross Society Pune	130
Figure 124: Blue Cross Society Plan	131
Figure 125: Blue Cross Society Courtyard	131
Figure 126: Concrete Roof Vaults	131
Figure 127: Blue Cross Society Examination Space	132
Figure 128: Landscape at Blue Cross Society	132
Figure 129: Blue Cross Society Ground Floor Plan	132
Figure 130: Section at AA	133
Figure 131: Section at BB.....	133
Figure 132: Location Map of Site.....	138
Figure 133: Electrical Distribution for the Site.....	140

Figure 134: Drainage in the Samakhusi River	140
Figure 135: Average Sun Elevation	141
Figure 136: Average Mean min. and max. Temperature of Kathmandu	141
Figure 137: Average Precipitation in Kathmandu	141
Figure 138: Average Monthly Sun hours in Kathmandu	142
Figure 139: Annual Mean Temperature and Rainfall Comparison Diagram	142
Figure 140: Public Services and Landmarks	142
Figure 141: Road and Accessibility of the Site	143
Figure 142: Visual Analysis of the Site	144
Figure 143: Scenes in Correlation to the Visual Analysis Aspects	145
Figure 144: Figure Ground Analysis	146
Figure 145: Solar Path and Site Amenities	146
Figure 146: Solar Path and Wind Direction Diagram.....	147
Figure 147: Site Profile along X-X.....	148
Figure 148: Site Profile along Y-Y.....	148
Figure 149: Site Analysis Maquette Diagram.....	148
Figure 150: Spatial Hierarchy.....	151
Figure 151: Initial Zoning.....	151
Figure 152: Dog Adoption Process.....	157
Figure 153: General Section Through Internal Courtyard.....	157
Figure 154: Types of Kennels.....	158
Figure 155: Landscape for Dogs.....	159
Figure 156: Landscape and Parks Integrated in Dog Shelters	159
Figure 157: Typical Animal Shelter versus Proposed Animal Shelter	160
Figure 158: Possible Entry Points to the Site	161
Figure 159: Animal Shelter Adjacency Matrix.....	162
Figure 160: Site Zoning	162
Figure 161: Division of Spaces.....	163
Figure 162: General Flow Bubble Diagram.....	163
Figure 163: Individual Block Bubble Diagram	164
Figure 164: Concept Phase 1	165
Figure 165: Concept Phase 2	166
Figure 166: Form Development.....	167
Figure 167: Master Plan.....	168
Figure 168: Bird's Eye View.....	169
Figure 169: View from Entry.....	169
Figure 170: Administration Block	170
Figure 171: Reception Area	170
Figure 172: Reception Courtyard.....	171
Figure 173: Waiting Area	171
Figure 174: Clinic Block.....	172
Figure 175: Clinic Reception Area	172
Figure 176: Memorial Block.....	173
Figure 177: Entry to Memorial Park.....	173
Figure 178: Memorial Park.....	174
Figure 179: Multipurpose Hall.....	174

Figure 180: Hall Layout.....	175
Figure 181: Indoor Training Layout	175
Figure 182: Holding Block	176
Figure 183: Holding Courtyard.....	176
Figure 184: Adoption Block	177
Figure 185: Adoption Block	177
Figure 186: Second Courtyard for Adoption Block.....	178
Figure 187: Staff Quarter	178
Figure 188: Staff Quarter Courtyard.....	179
Figure 189: Service Block	179
Figure 190: Dog Park.....	180
Figure 191: External Holding	180
Figure 192: External Holding Connecting to Service Block	181
Figure 193: Doggie Airlock	181
Figure 194: Physical Model	183
Figure 195: Water Supply Layout.....	186
Figure 196: Drainage Plan	187
Figure 197: Fire Hydrant Layout	187

LIST OF TABLES

Table 1: Number of VBP Positive Dogs.....	8
Table 2: Timeline of Animal Welfare Organizations in Nepal.....	17
Table 3: Dog Anthropometry Throughout its Lifetime	25
Table 4: Anthropometry for Pups (1-6 Weeks)	25
Table 5: Anthropometry of Dogs (Above 6 Weeks).....	25
Table 6: Various Types of Colors and their General Healing Properties	27
Table 7: Different Kennel Sizes for Dogs.....	37
Table 8: Inferences from Literature Review	59
Table 9: Analysis of Sneha's Care	71
Table 10: Analysis of Kathmandu Animal Treatment Center	83
Table 11: Analysis of SPCA Nepal	93
Table 12: Comparative Analysis of Animal Care Shelters in Nepal	95
Table 13: Space-Area Analysis of Vet for Your Pet.....	101
Table 14: Comparative Analysis of Animal Care Centers.....	134
Table 15: SWOT Analysis	149
Table 16: Calculation of the Number of Dogs.....	152
Table 17: Program Formulation.....	152

LIST OF ABBREVIATIONS

1. AAC: Autoclaved Areated Concrete
2. AAT: Animal Assisted Therapy
3. ABC: Animal Birth Control
4. BUA: Built-Up Area
5. C4C: Capacity for Care
6. CGI: Corrugated Galvanized Iron
7. CTVT: Canine Transmissible Venerable Tumor
8. DNA: Deoxyribonucleic Acid
9. FCI: Fédération Cynologique Internationale
10. HVAC: Heating Ventilation and Air-Conditioning
11. KAT: Kathmandu Animal Treatment
12. LED: Light Emitting Diode
13. NASA: National Aeronautics and Space Administration
14. NEA: Nepal Electricity Authority
15. OPD: Out-Patient Department
16. PAC: Political Animal Committee
17. PV: Photo Voltaic Cells
18. RCC: Reinforced Cement Concrete
19. RCU: Remote Control Units
20. RSPCA: Royal Society for Prevention of Cruelty to Animals
21. SPCA: Society for Prevention of Cruelty to Animals
22. STP: Sewerage Treatment Plant
23. HSI: Humane Society International
24. UV: Ultra Violet
25. WHO: World Health Organization



BARKITECTURE

— RESCUE ARCHITECTURE FOR DOGS —



INTRODUCTION

CHAPTER 1

1.1. Background

“Until one has loved an animal, a part of one’s soul remains unawakened.”

- Anatole France.

We’ve all heard people who say that pets are “just” animals, as though somehow they’re not important in our lives. These people have likely never owned a loyal dog or loving cat and their words couldn’t be further from the truth. Most pet owners will know how wonderful owning an animal can be; they will understand the companionship and how beautiful bonds can be formed between animal and human. Pets, especially dogs and cats, can reduce stress, anxiety, and depression, ease loneliness, encourage exercise and playfulness, and even improve your cardiovascular health. Caring for an animal can help children grow up more secure and active. Pets also provide valuable companionship for older adults. Perhaps most importantly, though, a pet can add real joy and unconditional love to your life.

The number of street dogs and stray dogs are increasing day by day. There is a difference between street dogs and stray dogs. The dogs having previous human owners, which were abandoned are called street dogs. Whereas, the dogs with no previous owners are called stray dogs. (Dave, 2018)



Figure 1: Street and Stray Dogs in Thamel

Source: The Longest Way Home

The Fédération Cynologique Internationale (FCI), also known as the World Canine Organization recognizes that there are a recorded 360 Species of dog breeds recorded throughout the world. (Bauhaus, 2018)

According to Neupane, Aditya, 2021, Xinhua News Agency, there are over 35,000 stray dogs in the Kathmandu Valley. These dogs suffer from starvation, infected wounds and other illness. Even though we celebrate “Kukur Tihar”, the day of the dogs, the street and stray dogs are considered “jutho” and are ignored. There are websites like “The Longest Way Home” that warn the tourists about the problems that can be caused by the street and the stray dogs and mention the possible ways to avoid them.

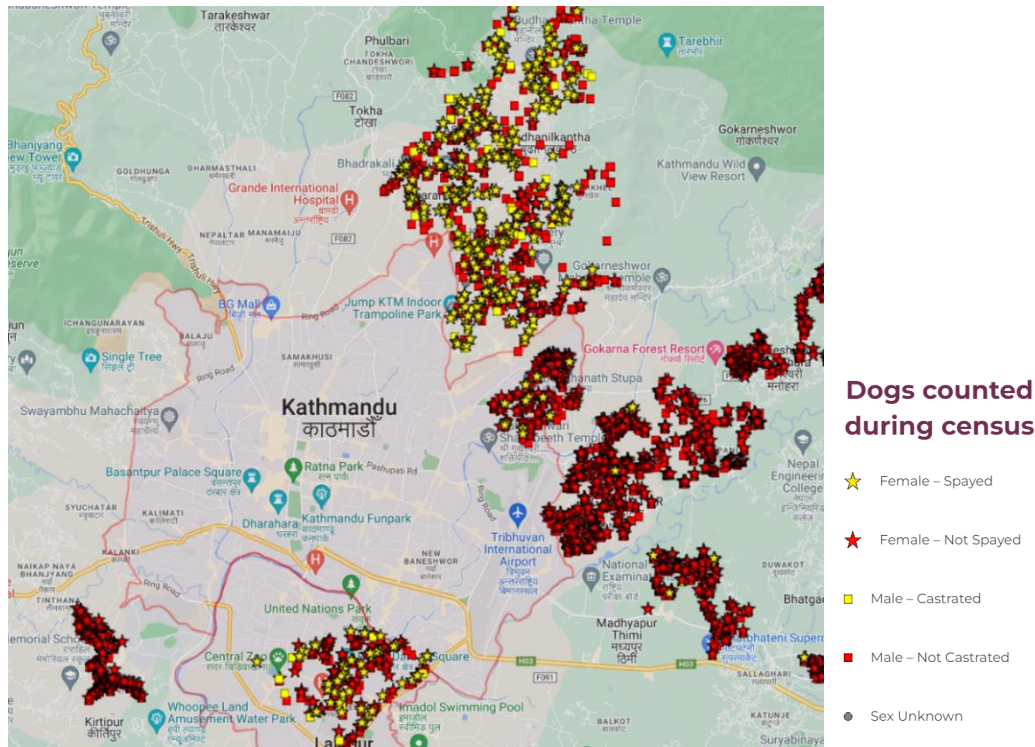


Figure 2: Location of Dogs Counted During Census

Source: KAT Center

1.2. History

The species of dogs has been shaped by domestication, both physically and behaviorally. The history of keeping the dogs as a pet and being domesticated is a subject of assumption. The questions of when, when, why, and how the dog became domesticated are still being debated by scientists. Farmers began to keep pets for security reasons as the agriculture developed, and dogs evolved from staying in farms to staying inside a home. Dogs’ original purpose was to defend the hunters during hunting seasons, assist farmers with load carrying, and provide security.

1.2.1.1. Domestication

Several species have been domesticated, but from thousands of years, the dogs were the first. Domestication is the adaptation of a population of animals or plants to life with humans through genetic modifications. Domestication processes will also help us better understand evolutionary processes. While Darwin (1868) stated that we shall probably never be able to identify their origin with certainty with regards to the dogs' progenitors, we now know that only the grey wolf is the dog's ancestor. (Sundman, 2019)

1.2.2. Origin and Location

The exact origins of dogs are unknown, but their nuclear DNA indicates that about 11,000-16,000 years ago, they were domesticated primarily by hunters, making them the first animals to be domesticated. Skeletal evidence of the dogs can be distinguished from the ones of the ones of the wolves. Early molecular works suggests divergence of dogs from the wolves started from about 100,000 years ago. (Narad, 2021)

Several geographical regions have been suggested as possible dog origins. These areas were chosen based on the maximum genetic diversity, which is a sign of proximity to the origin. Southeast Asia, the Middle East, and Europe have all been mentioned as possible origins. Most studies point to a single domestication event, while Frantz, et al. believe dogs were domesticated twice: first in Southeast Asia and again in Europe. (Sundman, 2019)

The dog's ancestors are said to have entered domesticated through a commensal route that began with them consuming human waste. Wolves are opportunistic scavengers, and it's thought that less fearful wolves were drawn to the garbage of human encampments, thus creating a new niche where they could become accustomed to humans. Thus, the domestication of wolves into dogs was, at least in the beginning, not deliberate or planned by human hunters and gatherers, but rather based on natural selection, a process known as the self-domestication hypothesis. (Sundman, 2019)

The commensal relationship gradually evolved into a mutual partnership in which both parties profited from the association, eventually leading to intentional breeding for desirable features. Dogs received sustenance and protection from their human partners, who in turn used the dogs for guarding, scavenging, and hunting, as well as for food and pelts. Cave paintings in Saudi Arabia, dated about 10,000 years ago, are thought to be one of the earliest depictions of dogs, representing people and dogs hunting together. Dogs appear to have been essential to humans from the beginning, as evidenced by the discovery of dog-related burial sites and a site in Israel dating to about 11,000 years ago where an elderly person was buried alongside a puppy. (Sundman, 2019)

1.2.3. Present Context

Two key trends have been identified in the changing lifestyle of dogs in the society. The first one is 'co-modification,' which is teaching dogs abilities for the benefit of people and the society and the other is 'broadening,' which is treating them as a part of the family with the provision of luxurious facilities like people. For some people, having a dog is a matter of prestige and style. A dog's lifestyle varies according to the owner's lifestyle in higher societies but in middle-class society, the quality of lifestyle may deteriorate, but they never fail to provide pets with basic needs demonstrating the importance of pets regardless the level of society. In the last few decades, pets have become so important that they went from being treated as other animals to having spas, clinics, shops, etc. dedicated to them. Dogs have become an important part of the society, not only as pets, but in other sectors as well. They are recruited in army, police and are trained for shows as well as for security purposes. (Narad, 2021)

1.2.3.1. Breed Formation

Since the beginning of domestication, several breeds of dogs have evolved as a result of adaptability to a shared habitat and selective breeding. This has resulted in morphological and behavioral differences between breeds that are unique to the species. The Fédération Cynologique Internationale (FCI), an international kennel association, acknowledges 346 breeds today, but there are possibly more than 400 breeds around the world. (Sundman, 2019)

Early archaeological evidences indicate that dogs with distinct morphologies have existed for a long time. An 8000-year-old site near Svedberg, Denmark, was excavated, and three different dog kinds were discovered. The modern breeding process, which includes severe selective breeding, closed stud books, and breed standards that emphasize form over function, is a relatively innovation that dates to the Victorian era in the nineteenth century. Most breeds were discovered to be less than 200 years old in a study on breed origins. (Sundman, 2019)

1.2.3.2. Sub-Population

Although dog breeds have a high degree of homogeneity, substructures occur due to geographic differences and breeders' various selection goals. Golden retriever populations in Europe and North America, for example, have a great deal of genetic variability. There are also breeds that have diverged due to fundamentally diverse selection criteria used by breeders, resulting in different breed types within the breeds. This division is most common when there are breeders for dog shows, dog sports, and pet dogs. There is a distinct difference between herding dogs and those raised for show and sports. For example, there are two types of golden and Labrador retrievers: one that is bred for display and the other that is bred for usefulness. (Sundman, 2019)



Figure 3: Golden Retrievers (a and b) and Labrador Retrievers (c and d) of Common Type and Field Type

Source: Sundman, 2019

1.2.4. Dog Culling

The rise in the population of street dogs continued. To solve the problem of the dog culling the government started to take actions. The government did so by mass killing the dogs in the area and dumping their bodies in a dumping site.

About 15 years ago, there was a massive dog culling to deal with the out of control dog population problem with the country. The number reduced drastically, as did the number of dog bites in the country. However, international animal rights protests and the Nepali love of dogs largely put an end to this.

Various other methods such as sterilization, caring, housing and education have been introduced since then. However, all have ultimately failed to control the number of stray dogs in Nepal. Thus, the current situation of the dogs is prevailing.



Figure 4: Mass Dog Culling at Chovar

Source: <https://kathmandupost.com/valley/2017/02/09/17-dead-breed-dogs-found-dumped-at-chovar>

1.3. Animal Care Facility

Animal care facility means any facility that provides veterinarian care, food, water, or shelter to an animal. They also provide animal shelter, maintained by or under contract with any state, county or municipality, whose mission and practice is, in whole or in significant part, the rescue and placement of animals in permanent homes or rescue organization. (Law Insider)

Local animal care facilities such as Kathmandu Animal Treatment (KAT) Center, Animal Nepal and Sneha's Care have been established in the country throughout the years. They provide affordable facilities like training and treatment to the pets. Although these organizations are trying their best, it is still not enough to solve the problem. They attempt to adopt and transfer out as many healthy animals as possible, but the problem is obvious: there aren't enough facilities to accommodate the large number of animals who are either unwanted or lost, and the existing facilities are failing due to poor location.



For something that we ourselves are responsible for, we seem to ignore the situation where these animals are suffering. There is not enough space, money or attention given to the subject. Hopefully, these situations will change for the better.

1.4. Need of the Research

There are many people who tend to adopt dogs as a hobby. After a while, they abandon the dogs. Some of the reasons for this are old age of the dogs, unwilling to pay the vet bills, etc. The dogs are then left in the street where they are prone to illness and disease transmission, injuries and even death due to accidents. People commit cruel acts of violence with knives and boiling water or whatever they have in hand. The government of Nepal routinely poisons whole neighborhoods of dogs under the pretext of reducing the population or eliminating the dangers of rabies, rather than inoculating and sterilizing.

Even during the adoption of the dogs, people tend to adopt dogs that are healthy, energetic and playful. The need of the study is to create a space that can assist in the treatment of the dogs both physically and mentally. The facility will consist a rehabilitation area and play areas for dogs to assist in the rehabilitation. There is a direct relationship between shelter condition and the adoption success rate. Designing a place having an ample space also helps in the development of the animals' physical and mental state. A 24-hour veterinary service is also planned to be incorporated in the design as there are very small number of veterinary hospitals.

1.5. Importance of the Research

The research is conducted in response to the current problem of abandoned street dogs seen throughout the Kathmandu valley. There is a daily increase in the number of street dogs. They are wandering in the streets everyday and are left ignored. One of the importance of the research is to learn about the response of the society and the government towards the current situation and the problems that are occurring due to it. The trend in the design might bring about a change in the way street dogs are being treated in the present context. The design should also try to incorporate environment-friendly and environment responsive concepts.

We design the buildings thinking about the physiological and psychological comfort of the people, but we often seem to ignore the requirements of the animals for their comfort. A building design with the animal comfort into consideration will help in the creating a quality environment for all the inhabitants of the building.

“Buildings and urban spaces should be designed first and foremost around their occupants.”

- Dr Sergio Altomonte

1.6. Problem Statement

Street dogs are present in large number everywhere in the society. The number of street dogs are increasing day by day. There are various reasons to which the pet dogs are abandoned discussed above. It creates its own kinds of problems in the society.

The street dogs mostly wander around the roads. Thus, they are highly susceptible to injuries from the vehicles. The drivers can only control their vehicle to some extent and some of the drivers don't even care about the presence of the dogs and just run over them. This results in heavy injuries for the dogs causing disabilities and mostly death.

The dogs that pass away are left ignored mostly where they are until KMC takes them away. The owners of the dogs also leave them in the street after the dog passes away. Every year, KMC spends around Rs. 1.5 to 2 million for the disposal of the dead animals that are found in the public places. (Bajracharya, 2019). The carcasses are then dumped in piles and left to decompose in river beds polluting the rivers and creating a grotesque scene.



Figure 5: Clean Nepal Manages Burial of Dead Animals Inside Kathmandu Valley

Source: *The Kathmandu Post*

Most of the society responds poorly towards the street dogs. They commit unimaginable acts of violence towards the dogs. For them, the dogs are nothing but a nuisance to the society. small scale dog rescue shelters are opposed as the barking of the dogs creates disturbance and are eventually removed and dismantled due to the pressure from the society.

Street dogs are also highly prone to the vector borne diseases. Diseases like rabies are very dangerous to the dogs as well the people around them. In a survey conducted by Parasites and Vectors, it was found that about 81.43% of the dogs were tested positive to atleast one of the VBP tests. These diseases are communicable and infect more and more dogs.

Table 1: Number of VBP Positive Dogs

Total no. of dogs	Number of VBP positive dogs (%)							
	Any VBP	H. canis	A. Platys	E. canis	Leishmania spp.	Theileria spp.	B. vogeli	B. gibsoni
70	57 (81.43)	22 (31.43)	22 (31.43)	19 (27.14)	13 (18.57)	9 (12.86)	9 (12.86)	2 (2.86)

Source: David Díaz-Regañón, 2020

The above table shows that there are about 82% dogs that are effected by pathogens and diseases. They are to be treated immediately to avoid further transmission for both the human and the dogs.

There are many problems in the existing animal care shelters as well. The existence of them are unknown to most of the general public. Also, most of the currently operating animal care shelter are working in a bad shape. A survey conducted by Reyhan Tamang shows the following major problems in the system (Tamang, 2021). Most of the problem in the centers are found to be:

- Lack of volunteers/employees.
- Lack of funding (especially during COVID crises).
- Overpopulation of animals in the shelters.

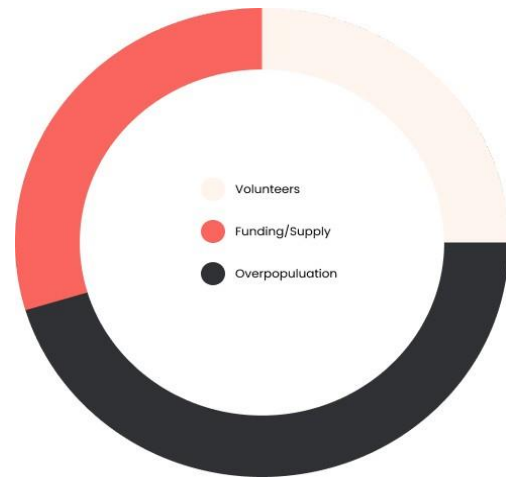


Figure 6: Pie Chart Showing Problems in Animal Care Shelters

Source: (Tamang, 2021)

1.7. Objectives

The project aims to conduct research on the topic such that it can fulfill the following objectives:

- To create a better environment for the street dogs.
- To help in physical and mental treatment of the street dogs.
- To design interactive spaces for the people and the animals.
- To educate the people about the street animals and adoption of new pets.

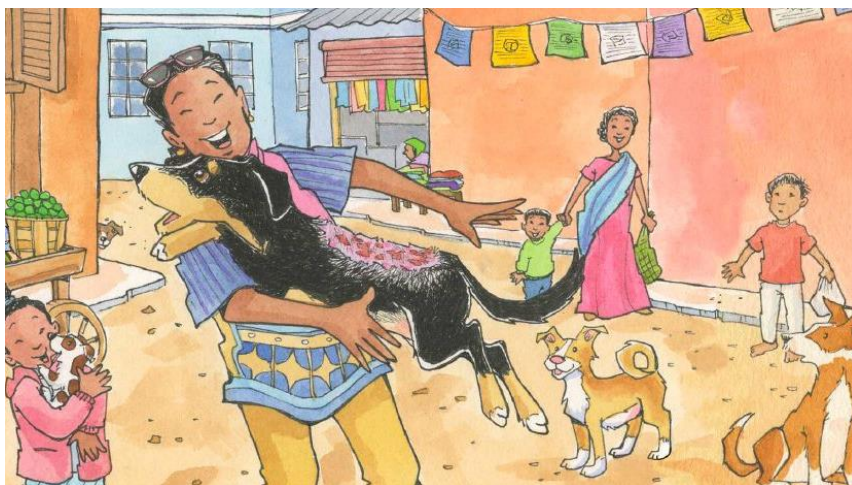


Figure 7: Cover Illustration of "Sathi" by Jenny Campbell

Source: Sathi- The Street Dog from Kathmandu, Nepal

1.8. Research Questions

- What are the requirements to design a comfortable habitat for the street dogs?
- What are the benefits and limitations of human-animal interaction?
- What are the special architectural requirements for the animals?
- How the animal behavior and features affect the design?
- What should be the proper location for the facility?
- How does the society respond to such facilities?

1.9. Methodology

Research Design process will be used for the data collection. The proposal started with the identification of the problem. The thesis topic was selected in response to the problem. The following are the research methods that will be used to collect the required facts, data, and the standards for the design. The obtained information will be collected, analyzed and implemented in the project.

1. Research Phase:
 - Case Study
 - Literature Review
2. Site Visit:
 - Site Analysis
3. Design Phase:
 - Program Formulation
 - Planning
 - Concept Development
 - Zoning
 - Preparation of Design
 - Architectural Plans, Elevations, Sections
 - Perspectives, 3D Views and Model Making

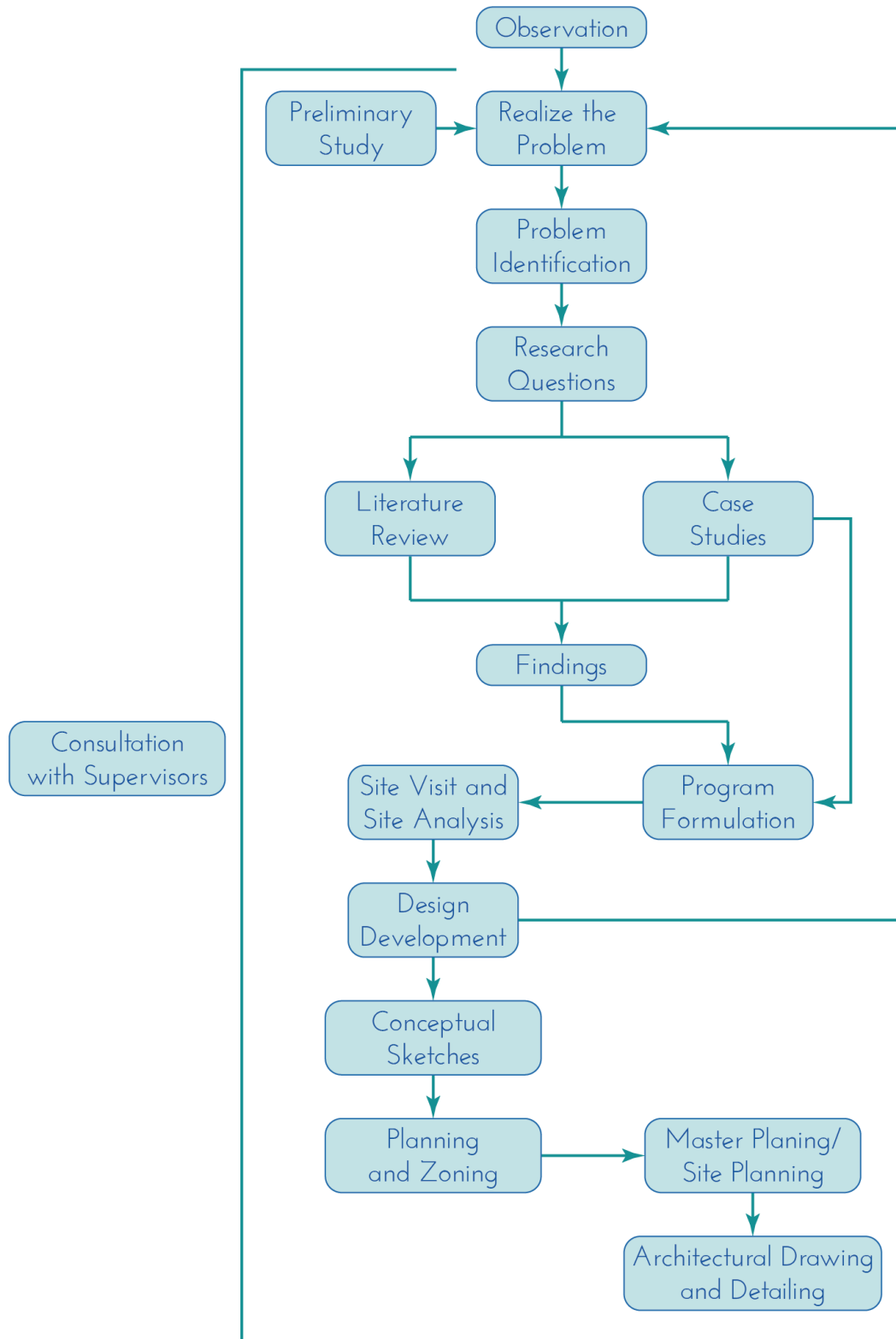


Figure 8: Flowchart Representing Design Methodology

Source: Author

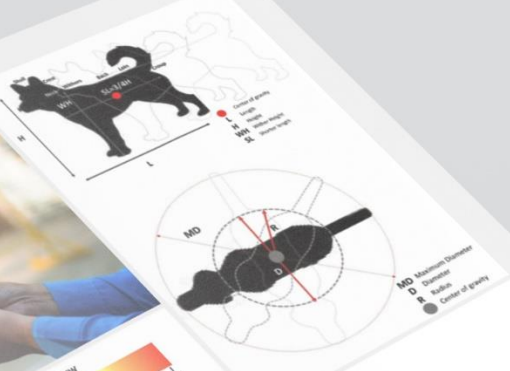
1.10. Expected Output

After the completion of the project, the following results are expected to be achieved.

- Create a safe and healthy environment for the street animals.
- Design spaces that will help in healing and rehabilitate the traumatized animals.
- Create interactive spaces for the people and the animals.
- Create an educational space where people can learn about the adoption of new pets and ways to take care of them.

1.11. Scope of the Project

The project mainly targets the street and stray dogs in the Kathmandu Valley. The study also considers the population of the dogs and their current situation. The project will help in provide a better life for the street dogs and help to solve the burning issue.



LITERATURE REVIEW

CHAPTER 2

2.1. Overview

With the improvement of physical and mental condition of people, it is common to have a pet in most homes. They bring joy and enrich one as they can play, talk, walk with them, and act as a companion as well. The reason for the sad scene of abandoned dogs roaming on the streets might be the inappropriate knowledge to keep them resulting them to get into accidents, attacking people or carrying disease without them knowing about it. Only few lucky dogs lucky are taken into rehabilitation center for care. Architects can solve the issue of overpopulated homeless dogs by taking a structural approach. (Narad, 2021)

2.2. Animal Welfare

The welfare of animals is an emotive topic and may mean different things to different people. Additionally, the words “welfare” and “well-being” are often used interchangeably. Animal welfare means how an animal is coping with the conditions in which it lives. An animal is in a good state of welfare if (as indicated by scientific evidence) it is healthy, comfortable, well-nourished, safe, able to express innate behavior, and if it is not suffering from unpleasant states such as pain, fear, and distress. Good animal welfare requires disease prevention and veterinary treatment, appropriate shelter, management, nutrition, humane handling, and humane slaughter. Animal welfare refers to the state of the animal; the treatment that an animal receives is covered by other terms such as animal care, animal husbandry, and humane treatment. Protecting an animal's welfare means providing for its physical and mental needs.

In scientific terms, no universally accepted definition of animal welfare exists; however, those most commonly used encompass many of the same ideas and principles. There have been several definitions proposed in the scientific literature; for example, “the state of an individual (animal) as regards its attempts to cope with its environment”. It has also been suggested that to define animal welfare we should ask two questions: “Are the animals healthy?” and “Do the animals have what they want?” (Group, 2019)

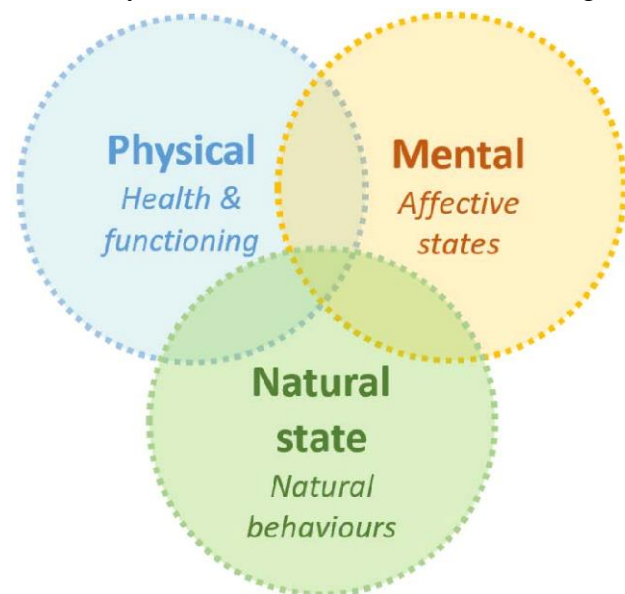


Figure 9: Overlapping Animal Welfare Concepts

There are three overlapping concepts of animal welfare as:

Source: Fraser, 2008

- physical state and functioning;
- psychological or mental (affective) state;
- ability to perform natural behaviors and live according to its natural state.

2.2.1. Animal Sentience

Sentience is an important concept in animal welfare. Professor John Webster defines animal sentience as “feelings that matter” (Group, 2019) and suggests that sentient animals have an awareness of their environment and the ability to make choices.

The New Zealand Veterinary Association defines sentience as: “the ability to feel, perceive or experience subjectively. Animals are not only capable of feeling pain and distress, but also of having positive experiences such as comfort, pleasure or interest that are appropriate to the particular species, environment and circumstances.”

Sentience includes an animal’s ability to experience positive and negative affective states (emotions plus other feelings such as hunger and thirst), including pain. Animals will choose to seek positive and avoid negative experiences. This occurs regardless of an animal’s intelligence; suffering and pleasure are defined as the ability to feel, and not by the ability to think. Recognition of animal sentience in law may go above simply protecting animals from pain or suffering, as the definition of sentience includes both positive and negative states, thus promoting positive welfare, not simply protecting against poor welfare.

When considering potential obstacles that obstruct interventions to protect animal welfare, it is timely to consider how animals, humans, society and environment closely interact. It is implausible to think about animals without considering their wider ecological context. Stanley, Richardson and Prior (2005) developed an ecological model for the development of children, and this committee has adapted this ecological model for companion animals. (Ryan, 2019)



Figure 10: Interaction Between Animals, Clinic, Owners and Community

Source: Ryan, 2019

2.2.2. Animal Welfare in Nepal

“Avoiding harm to all the creatures.... This is true knowledge. All else is ignorance.”

-Bhagwat Geeta

Animals have long been important in Nepal in the human economy, culture, religion, and magico- religion (Broom, 2003; Kshatri,2000; Lohani,2010; Ramakrishnan, Saxena, & Chandrasekhara, 1998) as cited in (Acharya, Acharya, & Wilson, 2018)

Major tenets are not to cause injury to living beings ("ahimsa") and reincarnation and transmigration (i.e., the soul is interchangeable and can be reborn into other forms). It is taught that to harm or kill living beings is a sin and humane treatment of animals is a way to salvation. Inhumane treatment is contrary to the ethos of Hinduism and Buddhism, and it is believed it leads to suffering or ill effects to the perpetrator. In Tihar, (Hindu festival of light), religious animals like cow, crow, and dog are worshipped in the memory of different Gods. Dogs are worshipped as protectors of the house; as the symbol of Yama, the deity of death. Many animals are even regarded as transportation of various gods and goddesses. These religious beliefs have somehow showcased how close our relationship has been with animals. Even though these companions are worshipped in certain days, many of them had to go through brutal abuse like sacrifices and tethering.



Figure 11: Dog Appreciation in Kukur Tihar

Source: <https://www.alamy.com/stock-photo/kukur-tihar.html>

2.2.2.1. A Look at the Present

Companion animals have never been as popular, played diverse roles or acted as economic drivers to the extent that they do today (AMIOT & BASTIAN, 2016). Regardless of whether the dog detects explosives or provides protection, company or social lubrication for an urban worker, or the cat functions in a disease-alert capacity or as a confidante, guidelines for remedying welfare problems are scarce. Increased urbanization has resulted in smaller living spaces, higher population densities and longer working hours, all factors affecting the well-being of pets. Fear and anxiety often go unrecognized, leading to behavioral disorders that are accompanied by negative affective states and poor welfare. The average life span of street dogs in Kathmandu is only 3 years while most of the puppies do not even survive (Acharya, 2018). Until recently, Kathmandu Municipality poisoned up to 10,000 dogs annually with strychnine, with each taking up to nine hours to die and suffering violent seizures in the process (KAT Centre, 2009). Many other municipalities in Nepal poison street dogs. A 2008 survey covering

656 people (297 animal caregivers (owners) and 359 community members) in Kathmandu, Lalitpur, and Bhaktapur provided insight into perceptions of and actions toward pet and stray animals in Kathmandu Valley. Some 64% of "pet" dogs were kept on a chain with 36% on very short chains. Pets died young-80% of puppies die prematurely-possibly due to general neglect and lack of awareness on canine health.

There are some 20 private animal welfare organizations in Nepal. Most are local organizations operating on limited budgets and are wholly dependent on donations. Most of them have limited enrichments be it health, nutrition, behavior or social. (Acharya, 2018)

Table 2: Timeline of Animal Welfare Organizations in Nepal

Welfare Societies	Established (A.D.)	Role/ Focus	Funding/ Support
Society for the Prevention of Cruelty to Animals Nepal	1990	Eliminating animal suffering and promoting wellbeing; Clinic, recovery and rehabilitation shelter	RSPCA (UK)
Society for Animal Welfare and Management	1998	Create awareness of cruelty to animals; Provide free veterinary services to stray and needy animals; Management of stray, domestic, and wild animals	Royal Society for the Prevention of Cruelty to Animals (RSPCA, UK) Humane Society International (HSI, USA)
Animal Health Training and Consultancy Service	2000	Animal health, husbandry and equine welfare; Organize livestock campaign and consultancy services	Brooke
Kathmandu Animal Treatment Center	2003	Create rabies-free, non-breeding street/ community dog population in Kathmandu Valley through ABC program	Humane Society International; registered as charity also in United Kingdom
Animal Nepal	2007	Humane Dog Management Programme (to create a smaller and healthier stray dog population)	The Donkey Sanctuary; Animal Aid Abroad

Animal Welfare Network	2008	Increase effectiveness and co-ordinate activities of animal welfare organizations	Humane Society International
Street Dog Care	2009	Provide medical care; vaccinations, rehabilitations, and sterilization for the street dog population of Boudha	Public Subscription
Godavari Donkey Sanctuary	2009	2009 rescue sick and handicapped equines Brigitte Bardot Foundation	Animal Aid Association Australia
	2010	Working Equines Outreach Programme	The Donkey Sanctuary
Bhaktapur Animal Welfare Society	2011	Stray dog population (Animal Birth Control (ABC)) Program; rescue, treatment and release, mass anti-rabies vaccination camps; educational support for local awareness	Society for the Prevention of Cruelty to Animals International
Animal Rights Club	2012	Halt religious sacrifice; protect and preserve animal rights	Public Subscription
Friends of Nepal's Street Dogs	2012	Support street dog projects by creating practical opportunities for kind of people to help	Public Subscription
Sneha's Care	2014	Protect street and community dogs from torture, cruelty, or ill usage	Nepal Street Animal Rescue (USA Charitable Corporation)
Nepal Animal Welfare and Research Center	2014	Anti-sacrifice programs; Rabies vaccination and spaying campaign	Public Subscription
	2014		Working Elephant Outreach Programme
Voice of Animal	2015	Nepal provide shelter and treatment for stray, abandoned, and sick animals	Public Subscription

	2016	Cattle Development Center	
	2016	Animal Health Care and Management Project	
	2017	Working Equine Welfare Project	
Kopan Monastery/ Enlightenment for Animals	2017	Animal Liberation Sanctuary (cow, sheep, goat)	Foundation for the Preservation of the Mahayana Tradition
Himalayan Animal Rescue Trust	2017	Redress suffering of animals without power to control their lives (Pokhara and Bhaktapur Districts)	Finds raised in United Kingdom by subsidiary Himalayan Animal Treatment Shelter
Community Dog Welfare Kopan	2017	Network for dog welfare; Low-cost treatment, dog health programs; Creating awareness	Himalayan Animal Treatment Center (UK); Himalayan Animal Rescue Trust; Affiliated to Australian volunteer program
Stray Dogs Rehabilitation, Kathmandu, Nepal	2017	Rescue injured and mistreated stray dogs for rehabilitation and safe housing in pet shelters	Put up for adoption or released public subscription
Project Humane Nepal	2017	One-time presentations and week-long educational workshops, encouraging children to have compassion towards stray/pet dogs	Help Animals India

Source: Acharya, 2018

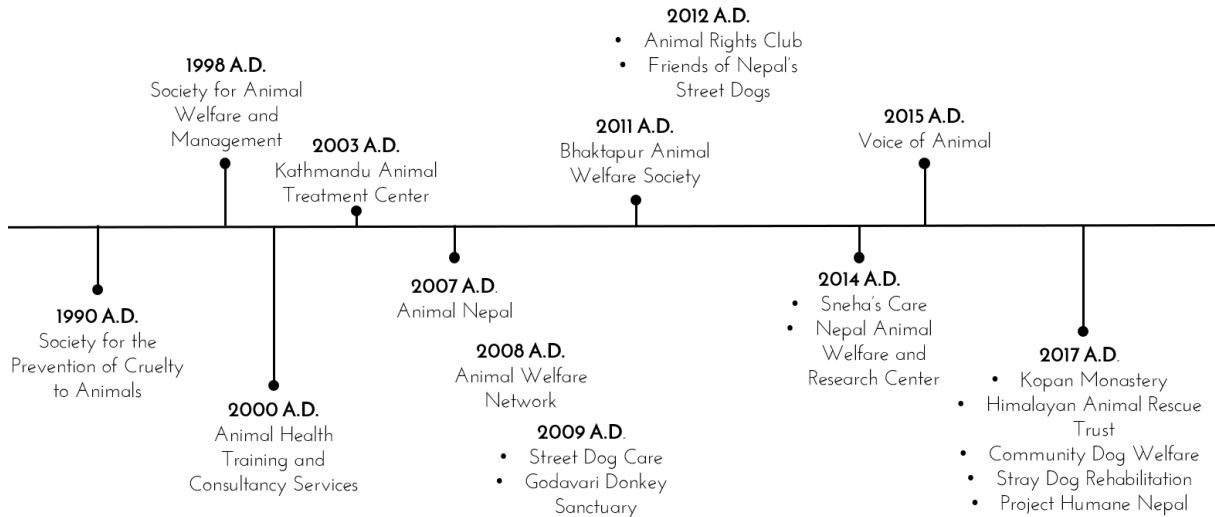


Figure 12: Timeline of Welfare Organizations in Nepal

Source: Acharya, 2018

2.3. Animals' Needs

Basic life processes are required by all species, and so they have basic needs. Animals kept in confinement, such as pets or those in a shelter or zoo, are completely reliant on humans to supply the circumstances that will meet their fundamental needs. As a result, anyone caring for animals must be knowledgeable of all of their requirements. (RSPCA, 2020) These basic needs are shared by humans and other animals, and they can be divided into five categories:

- **Physiological needs**
e.g. food and water, appropriate temperature/humidity, air and light conditions etc.
- **Social needs**
preference for living in solitude, in **pair bonds** or in a group
- **Psychological needs**
appropriate stimulation and **activity** to prevent boredom.
- **Environmental needs**
suitable home, space **and territory**.
- **Behavioral needs**
e.g. hibernation, nest building, burrowing.



Figure 13: Animals' Needs

Source: Author

2.4. The Five Freedoms

The RSPCA argues that animal welfare requires consideration of five basic "freedoms." The RSPCA's animal welfare philosophy is based on these five freedoms. They were created by the Farm Animal Care Council, the UK government's independent advisory body on farm animals, but they can also be used to assess the welfare of animals in shelters.

- **Freedom from Hunger and Thirst:**
By providing ready access to fresh water and a balanced diet that maintains health and vigor
- **Freedom from Pain, Injury and Disease:**
By prevention or rapid diagnosis and treatment.
- **Freedom from Fear and Distress:**
By ensuring conditions and treatment which avoid mental suffering.
- **Freedom from Discomfort:**
By providing an appropriate environment with shelter and a comfortable resting and sleeping area.
- **Freedom to Express Normal Behavior:**
By providing enough space, proper facilities and appropriate company of the animals' own kind.



Figure 14: The Five Freedoms for Animals

Source: <https://www.rovagnatiqualitaresponsabile.it/en/projects/animal-welfare>

2.5. Adoption Procedure

2.5.1. Incoming Animals

Arriving dogs must spend at least 10 days in quarantine. This period can be shortened or lengthened depending on the incubation times of the most prevalent infectious diseases in your shelter or neighborhood. It's crucial that your shelter has a designated quarantine space. There should be no interaction between animals under quarantine or between animals up for adoption and those under quarantine. Within 24 hours of their arrival at the shelter, or sooner if there are any symptoms of illness or injury, all animals should be evaluated by a veterinarian or a knowledgeable staff member. Additionally, animals should arrive vaccinated and dewormed. (RSPCA, 2020)

During the period of quarantine, it is possible to evaluate the animal for any clinical or behavioral issues. This will aid in rehoming and/or grouping suitable animals, especially in communal kennels or catteries. Paper or electronic records should be kept of the information obtained at arrival and during quarantine. (RSPCA, 2020)

Upon arrival all animals should be:

- Quarantined
- examined by a vet
- wormed
- vaccinated

2.5.2. Adoption

You may occasionally have to acknowledge the need for the death of healthy animals if your organization wants to achieve the highest possible adoption rates from your shelter and there is a serious problem with stray and unwanted animals. The possibility that an animal will be adopted again should be considered while making this choice. Any time limit that is set should consider:

- The shelter's capacity
- The amount of time staff or volunteers can spend with each animal to ensure it remains sociable and therefore suitable for rehoming
- The pressure on kennel space due to incoming stray or unwanted dogs
- Whether animals are kept in individual kennels or group housing
- The country's legislation that may prohibit euthanasia or set a maximum time limit.

2.5.3. Rehoming

- Finding animals responsible, long-term homes is the goal of an animal shelter's rehoming program.
- For staff and volunteers to know what to do, it is crucial to establish a protocol for rehoming.
- The written description of the procedure should include the forms that are utilized, the order of the steps, and any costs that might be assessed.
- Your organization will be able to make the best choices for the adopted animals with the aid of responsible rehoming policies and processes.
- Utilize a pre-adoption questionnaire to gather as much as you can about the lifestyle, education, and dedication of the prospective adopter.

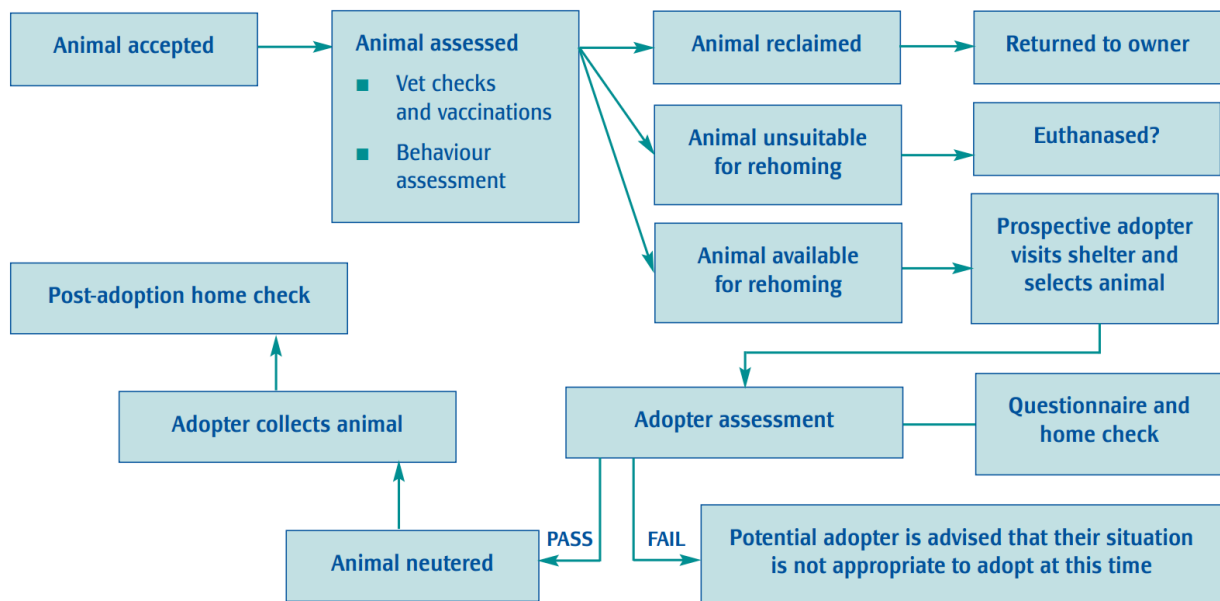


Figure 15: Animal Rehoming Process

Source: RSPCA, 2020

2.5.4. Establishing Shelter Routes

“The establishment of effective routines is an important part of running a shelter. Well-designed routines help an organization to run smoothly and consistently achieve set standards. Routines also help to ensure that all staff are aware of their responsibilities. Routines should be established for admitting animals, rehoming procedures and daily tasks.” (RSPCA, 2020)

2.5.5. Establishing Shelter Policies

Neutering, rehoming, and euthanasia policy considerations are of utmost importance. All these problems are sensitive but taking the time to establish firm guidelines on them early on will save money from being squandered on the construction of a shelter that won't satisfy the needs. The creation of policies will influence how the shelter is operated daily and aid in directing the activities of an organization. The rules of shelter should reflect the thoughtful stance the organization has taken on specific issues and the values it believes are crucial. (RSPCA, 2020)

Benefits of establishing shelter policies:

- sets, maintains and monitors standards and ensures continuity of animal care
- prevents misunderstanding and confusion for staff and supporters
- ensures compliance with relevant legislation.

2.6. Physiology and Psychology of Dogs

The average life-span of dog is about 10-13 years. Narad quotes that “If dogs are isolated from humans till 12 weeks from the birth it becomes hard for them to establish a good companionship with humans.” These 12 weeks being divided into Neonatal period (0-2 weeks), transitional period (2-4 weeks) and the Socialization period (4-6 weeks for dogs and 4-12 weeks for people). Neonatal period is the maternal period where mother and pups imprint each other in their minds where the mother’s behavior affects the pups. Their sensitivity to touch, pain, temperature and taste, hearing, vision and are still undeveloped in this phase. Transitional period is where hunger senses develop. Socialization period is where their senses develop and require social interaction and more circulation space as it develops communal behavior. (Narad, 2021)

Dogs use a unique mode of communication called mute signaling which gets developed over time. This shows that we can’t create a dog that unlocks a door or open a water bottle, but we need to design a door without a lock or water bottle especially for dogs. (Narad, 2021)

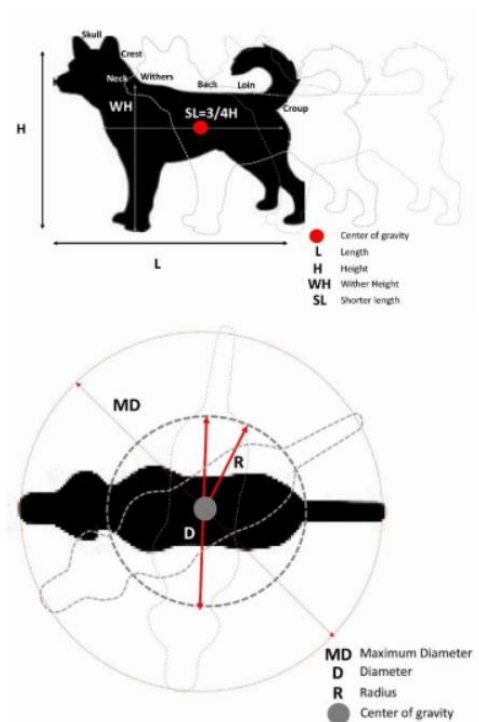


Figure 16: Anthropometry of Dogs

Source: Narad, 2021

Table 3: Dog Anthropometry Throughout its Lifetime

Legend	Minimum	Maximum
H (Height)	25 cm	112 cm
L (Length)	40 cm	122 cm
WH (Wither Height)	15 cm	78 cm
MD (Maximum Diameter)	70 cm	165 cm
D (Diameter)	25 cm	90 cm
R (Radius)	12.5 cm	45 cm

Source: Narad, 2021

Table 4: Anthropometry for Pups (1-6 Weeks)

Legend	Minimum	Maximum
H (Height)	25 cm	50 cm
L (Length)	40 cm	55 cm
WH (Wither Height)	15 cm	35 cm
MD (Maximum Diameter)	70 cm	80 cm
D (Diameter)	25 cm	35 cm
R (Radius)	12.5 cm	15 cm
Total Area	0.38 sq. m.	0.5 sq. m.

Source: Narad, 2021

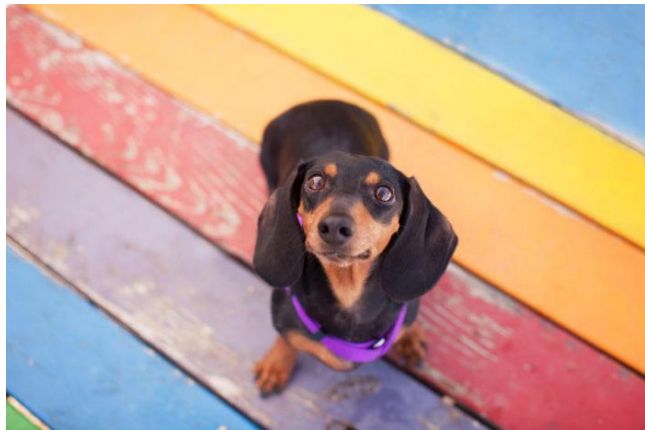
Table 5: Anthropometry of Dogs (Above 6 Weeks)

Legend	Minimum	Maximum
H (Height)	50 cm	112 cm
L (Length)	55 cm	122 cm
WH (Wither Height)	35 cm	78 cm
MD (Maximum Diameter)	80 cm	165 cm
D (Diameter)	35 cm	90 cm
R (Radius)	15 cm	45 cm
Total Area	0.5 sq. m.	2.14 sq. m.

Source: Narad, 2021

2.7. Perception of Colors

Certain types of colors just lift our spirits and puts in a great mood while others leave a feeling of tranquility and calm. There is a good reason for this. Scientific data confirms that each color found in the visible light spectrum has its own measurable wavelength and vibrational frequency. This means, for instance, the color blue is vibrating at a different frequency, or energy level, than the color red. (McKenzie, 2010)



Source: <https://animalwellnessmagazine.com/color-therapy/>

While we often tend to think about in superficial ways, in reality its healing power can work much more subliminally.

Particular vibrations of colors can be used to treat various conditions by promoting healing and balancing in areas that our bodies (or those of animal companions) are lacking, including issues on physical, mental, emotional or spiritual levels.

Color therapy (also known as chromatherapy) is an ancient form of healing which has its roots in India (Ayurvedic Medicine), Egypt, and China. To fully understand how color therapy works and the level that it works on, it's important to have a general understanding of the human/animal energy field. (McKenzie, 2010)

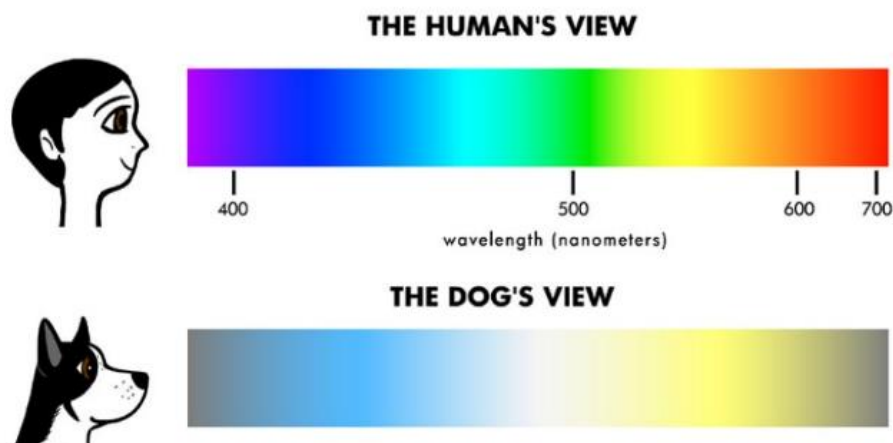


Figure 17: Color Spectrum Visible to Dogs

Source: (Abrantes, 2014)

Colors can be administered to animals in a variety of ways. Use colored decor such as fabrics for bedding and blankets, select specific colors for halters and collars, bathe your animal in lights from a color-filtered light source or solarize the drinking water. To use color via light, simply place a colored light (or regular light with a theatrical color gel or transparency over it) in an area of the house or stall with a comfy place for the animal to rest. Allow the animal to gravitate to the area on his or her own.

An animal’s instincts will naturally guide him towards what his body needs. It is very important to make sure your companion is not subjected to this treatment in a crate, cage or small stall where he or she cannot move away from it. Your animal will intuitively know if and when he or she has had enough. To solarize drinking water, simply surround a glass container of water with an appropriately colored theatrical gel and leave it in the sunlight for a number of hours. Then serve this water to your animal companion in their dish or water bucket. (McKenzie, 2010)



Figure 18: Scene that Depicts What Human See versus What Dogs See

Source: (Abrantes, 2014)

Table 6: Various Types of Colors and their General Healing Properties

S. No.	Color	Symbol	Animal Psychology
1.	White	Clarity/purity	Used for most general lighting conditions
2.	Red	Vitality, courage, self confidence	Use for a timid animal or when your companion animal is facing a particularly demanding day and needs extra energy
3.	Orange	Happiness, confidence, enthusiasm	Use to bring joy to your animal companion, and to help him be more independent, self-assured and social
4.	Yellow	Mental ability, versatility, playfulness	Use when concentration is needed or to promote playfulness and flexibility in rigid animals
5.	Green	Balance, love, calmness	Use to help relax your animal companion and bring about a feeling of peace, harmony and unconditional love
6.	Blue	Health, knowledge, relaxation	Use to help pacify nervous and hyperactive animal companions, especially those who fret or appear to ruminate
7.	Indigo	Sedative, calming, intuition	Use to enhance telepathic communication with your animal companion, also to calm and sedate him and clear away anger
8.	Violet	Soothing, inspiration, creativity	Use to give inspiration to an animal during training or difficult tasks, to promote soothing calm, and to dispel depression

Source: (McKenzie, 2010)

2.8. Animal Assisted Therapy

Animals like dogs, cats, and rabbits are being used for the treatment of acutely and chronically ill patients. The main objective is to decrease stress and improve physical condition of the patient. It usually involves a program with an animal and a handler assigned to a single patient. The animals are first evaluated for temperament for a stable and safe behavioral pattern. (Miller, 2002)

A 1999 research of 18 dogs and 18 humans examined neurochemicals and mean arterial pressure in both humans and dogs to provide a scientific basis for animal-assisted therapy. The research, which was conducted as part of a PhD thesis for the University of South Africa, compared silent reading to human-dog interaction and found that both activities were nearly as successful in reducing human stress. However, its usefulness is challenging due to the limited sample size. Other physical benefits have been demonstrated in case studies of animals used in rehabilitation programs. A stroke sufferer, for example, might use a wrist weight to enhance resistance while grooming an animal to gain strength and muscular conditioning. To establish the benefits of animal-assisted therapy in the rehabilitative context, more research is still required. (Miller, 2002).



Figure 19: Animal-Assisted Therapy

Source: Miller, 2002

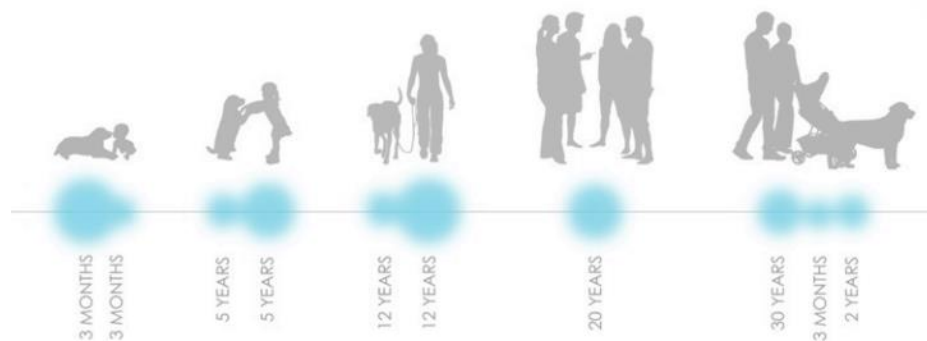


Figure 20: Child-canine socialization Impact and Significance at Various Age Groups

Source: Nagel, 2018

2.8.1. Emotional Benefits

People enjoy interacting with animals and there are some studies that have documented the psychological benefits. A one-year controlled trial was conducted by Barak and his colleagues involving geriatric patients with schizophrenia. 10 of them interacted with a pet in weekly four-hour sessions for a year.

This group was compared with a control group of 10 patients who were given current news to read and debate among each other. Social functioning, impulse control, and everyday activities all improved significantly in the animal-therapy group. Reduced stress levels, enhanced emotions of self-worth, and support in adjusting to an altered body image are among the psychological benefits of animal assisted therapy that have been recorded, according to a literature review conducted by Connor and Miller. Animal-assisted treatment resulted in a twofold reduction in anxiety over therapeutic recreational activities in patients with a variety of psychiatric disorders. (Miller, 2002)



Figure 21: Dog playing with a sick child

Source: Miller, 2002

Animal interaction is used in prisons as a technique for behavior control for prisoners and as a reward for good behavior. Some jails have established training programs in which prisoners train animals; these programs appear to boost the self-esteem of the inmates. (Miller, 2002)

2.9. Interrelationship

Numerous studies have been conducted on this subject, but architectural implications to foster human-animal, human-environment, and human-human interactions have been overlooked. There aren't many animal-environment correlations. discussed. The following are the types of relevant relationships and proposal designs to improve them:

2.9.1. Human-Animal Interrelationship

It is found that walking with dogs, playing and petting them reduces physical and mental problems in both people and dogs. Dogs are involved as personal healers for patients under Animal Assisted Therapy (AAT). The research paper titled “The use of dogs in hospital settings” explains the benefits of dogs in hospital where it states that dogs can reduce pain, stress, anxiety and provide a friendly atmosphere in the hospital. If open spaces in our neighborhood gets accessible to dogs with dog friendly spaces, human walking rate may increase. (Narad, 2021)



Figure 22: Seating for People and Dogs

Source: Narad, 2021

Some designs for open spaces for hyperactive breeds of dogs can increase interaction. A punctured wall with playing tools in gardens and other open spaces for them to jump, crawl and run can be designed increasing the interaction. Dogs, as the most socialized animals, can suffer if they are kept in a contained habitat. Dogs' anxiety increases as they grow older so, social interaction with people and other animals are very important. A dog's home can be built so that it provides fresh air, direct sunlight, and opportunities for interaction with people. For example, a glass partition can be provided between the dog dwelling and the corridor which avoids physical contact but having someone in the vision can also act as a part of socialization for the dogs. (Narad, 2021)

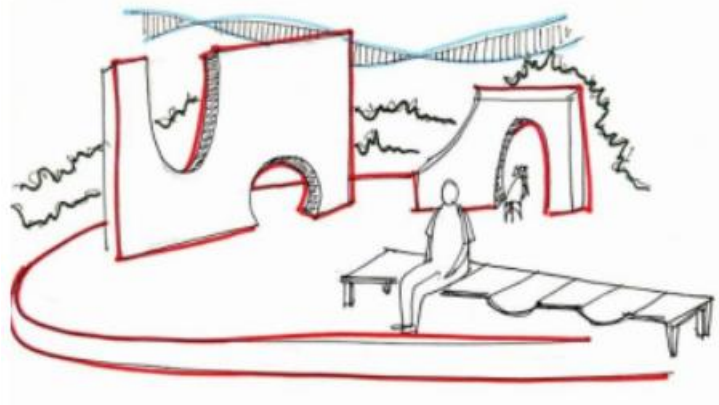


Figure 23: Punctured Walls for Dogs to Jump and Crawl

Source: Narad, 2021

2.9.1.1. Social Characteristics

The social characteristics of a dog in conjunction with their reliance on the senses also contribute to some behavioral issues. In the context of an animal shelter, it is not uncommon to come across an animal that has been abused, neglected, or stray, and therefore lack human interaction or simply have not experienced positive interaction. This is the reason as to why many troubled animals will not find a home; people choose which animal they will adopt based on compatible behaviors. Some of these factors from a dog's past and the conditions and spaces they were kept in may have led to behavioral issues or aggression later in their lives. Aggression can stem from a number of previous circumstances such as abuse, dog fighting, lack of socialization, or simply sensing that someone is particularly unfamiliar. Competitive aggression takes place when one dog is dominant over the other, and with our 15 understanding of the "pack" hierarchy we are able to better comprehend the problem. Fear-related aggression occurs when the dog would rather escape if he or she could, but that is not an option. If the human backs away the dog's fear is reduced, so it is common to resort to growling and snapping. Pain-induced aggression stems from dog fighting, for the human will enforce pain so that the dog bites back in self-defense and therefore continues to fight. We can attempt to combat these behavioral issues with this initial understanding of the animal's past and take the



Figure 24: Olfactory Environmental Information

Source: Nagel, 2018

appropriate steps to aid in rehabilitation. It is not impossible for these animals to improve mentally and physically, and they need environmental accommodation as well as the proper training and socialization in order to heal. (Nagel, 2018)

2.9.2. Animal-Environment Interrelationship

Dogs have great relationship with environment also, having positive and negative impact on their mental health like when the dogs are anxious when left inside an enclosed house and are calm when provided with a small open-air garden. In kennels, the environment is very stressful as many dogs are accommodated in a common hall. The kennel architecture is incorrectly implemented where the pods or the dwelling units are not according to standard without proper circulation or sanitation. It is found that dogs love tree foliage on the ground and enjoy walking on them and play with their masters along with playing with the birds and the butterflies. It is not necessary for them to play with the toys only to stay active and fit. (Narad, 2021)

Dogs are great sniffer and are used in military and police stations for finding food and protecting their masters. As false as it may appear, dogs do not have a sense of taste and recognize edible foods based on the odour and texture. Although dogs are adept at finding their way to their destination, there are some who do not. Designing a dog maze in a park may aid in dog training, and so a non-professional trainer can take their dogs to the park and train there. Every dog dig on a regular basis, and it's a part of their personality. One cannot modify their habits because they are necessary for their physical development, but one can certainly design their spaces in the way they like. Sandy grounds are required for building dog play spaces, as this is the only method to avoid the destruction of foliage. (Narad, 2021)



Figure 25: Dogs' Park

Source: <https://www.ci.staunton.va.us/departments/parks-recreation-/parks-gypsy-hill-park/dog-park>

2.9.3. Human-Environment Interrelationship

People have been through many changes from ancient times and the environment along with us. From animals ruling the planet, human is the ruler now. Before, human developed technologies for their own security and luxury and now, the technology is being developed for animals and nature implying human surrounding changed from animals, birds and trees to skyscrapers, towers and vehicles. The previous surrounding was the main reason for a healthy and long life of the people. Many studies have shown that natural sounds such as birds singing, winds blowing, water falling, rivers flowing, sea waves crashing, and animals roaring keep

people's minds calm, relaxed, and anxiety-free, but today's massive pollution prevents nature from reaching us. If human psychology is taken into consideration, these natural aspects can be reintroduced into society by creating more recreational places, which can assist people in overcoming psychiatric disorders. (Narad, 2021)



Figure 26: Visibility to Appeal of Destination (Relates to Willingness to Move)

Source: Nagel, 2018

2.10. Human Animal Behavior

Behavior patterns differs from people to animals and from animals to people in many areas. Domestic animals like dogs, cats, pigs, hamsters, rabbit, etc. can socialize and adjust with people and their surrounding as they don't have special habitats like wild animals and their eating habits, most of which are vegetarian and pocket friendly. Socializing with people makes it easy to train them as without it, training them is like dictatorship without any freedom and animals need to feel free or they ruin the environment. Dogs likes, and dislikes mostly depends on their masters. They sense the emotional conditions of their master and try to help by doing annoying funny activities to lighten them. When dog feels ignored, they act to get sick to get their master's attention. (Narad, 2021)

Wild animals like lions, tigers, hyena, cheetah, etc., though they are restricted to pet, they are domesticated in some places where the billionaire practice it to showcase their prestige but is banned now. They are friends to people only if they are loved and respected from childhood. Wild animals are dictators and people are dominated, so human have their friends from childhood to get into their habitats. People do so by doing thing like the animals do like drinking water from pond or grooming with hands compared to licking done by animals. Architects can design shelters for them as well. Just like domestic animals, wild animals also need shelters. The only difference is the scale and load resistance of the design. (Narad, 2021)

2.10.1. Interactive Benefits

Animals as our companions are proven to have a positive impact on our lives, and we reciprocate these benefits through our close interactions. Specifically, in a domestic setting, the bonds we share with pets parallel those of human family relationships. These bonds and the benefits experienced are not exclusively for pet owners, for it only takes a few minutes of positive interaction between a dog and a human for chemical reactions to take place within the body. Levels of oxytocin, endorphins, and dopamine significantly rise in both parties. Oxytocin activates the parasympathetic nervous system linked to growth and restoration, and for animals, the chemical increases the pain threshold, lowers blood pressure, lowers cortisol levels, increases healing, facilitates learning, and reduces anxiety. For humans it increases social interaction, increases the ability to interpret social cues, reduces anxiety, increases trust and a sense of wellbeing, and decreases sensitivity to pain. Dopamine affords the brain rewards and pleasure, while endorphins relieve pain and induce feelings of pleasure or euphoria. One of the simplest ways to increase levels of these various chemicals is through positive physical touch. (Nagel, 2018)

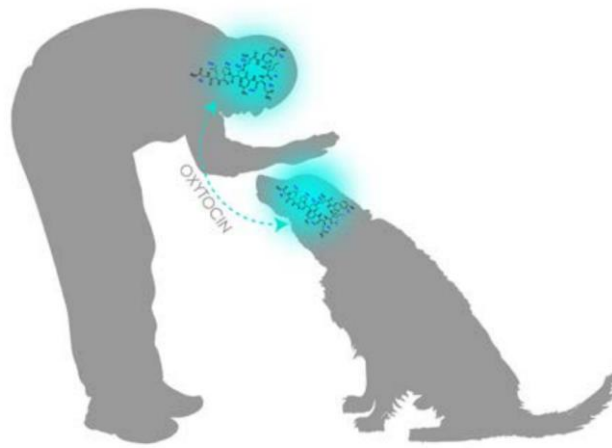


Figure 27: Oxytocin Levels Increase with Positive Physical Interaction

Source: Nagel, 2018

2.11. Designing the Shelter

When designing a new facility or remodeling the current facility, it is important to think about not only the type of housing that will be used, but also the appropriate number of housing units to have for each type of animal that the shelter cares for. Determining the number of housing units is based on past intake and outcome trends as well as the shelter's capacity for care (C4C) – the ability to provide all animals in their care with the Five Freedoms of Animal Welfare. Understanding this and developing population management strategies to achieve C4C will allow the organization to be successful in the new/remodeled facility in terms of providing outstanding welfare (for both animals and staff) and positive outcomes.

The priorities should be:

- the needs of the animals and the safety of the staff and public
- the needs of the people looking after the animals
- the needs of the people visiting the shelter.

2.11.1. Site Selection

- Should you rent or purchase a site? Does the location have room to grow?
- Is the site at least 400 meters away from the closest residential area?
- Does the location have good natural drainage on high ground?
- Is it simple to use public transportation to get to the site? Both the team and potential adopters might find this to be significant.
- Can mains electricity, water, or drainage be connected?
- Which building supplies are easily accessible?
- What building materials are suggested for the local climate?
- Should you construct a new structure or remodel an existing one?
- What are the locals' perspectives?

2.11.2. General Recommendations for Animal Housing

A cornerstone of successful shelter design is determining the right size and type of animal housing. To meet animal needs, reduce animal stress and allow staff to care for animals safely and efficiently, housing should be double-compartment. These recommendations intend for all animals to be housed individually. The housing recommended will meet most animals' needs for up to about a two-week shelter stay. If animals are expected to be housed in the shelter for periods beyond two weeks, then accommodation for additional needs – for more housing space, out-of-housing time, and provisions for behavioral needs according to the individual animal – must be met; the housing recommendations provided here are not intended for extended stays.

In general, all individual (dog and cat) shelter housing should:

- Be used such that during average intake times no more than 80% of housing be occupied. Open housing units are a must for shelters to function effectively day to day.
- Provide double compartments of adequate space for animal housed
- Provide a place for retreat within the housing unit (carrier/crate [whole or just bottom half], hiding box, high sided bed, cardboard box, curtain/towel attached to housing unit door, etc.)
- Allow human/animal interaction to readily occur at the front of the housing unit
- Maximize the floor space by utilizing raised beds and elevated food/water dishes
- Provide fresh clean food and water daily
- Provide as much choice within the housing unit for the animal (soft and hard surfaces, cool and warm surfaces, floor and elevated height spaces, hiding/retreat space, indoor and outdoor space, window viewing, etc.)
- Be located in a quiet environment
- Provide natural lighting
- Provide adequate ventilation – open barred doors generally allow room ventilation into housing spaces and are preferred over completely enclosed housing units
- Enclosed housing units must be individually ventilated
- Have surfaces that are easy to clean and disinfect
- Provide visual stimulation – window views, outdoor views, view into the center of the room, etc. (generally avoid views into a blank wall)

2.11.3. The Building Layout

- Individual or Quarantine Kennels:

A minimum of 2m² of covered, draft-free space should be provided for each dog. The bed surface ought to be elevated. The temperature ranges from 10°C at the low to 26°C at the high. A sleeping area needs to be well-ventilated and illuminated with both natural and artificial light. A minimum of 2.5–3.5m² of open exercise space is needed for each dog. Weld mesh fencing with a minimum height of 2 meters is required. To prevent dogs from climbing, the top should slope inward. There must always be a glimpse of the outside for the animals. (RSPCA, 2020)



Figure 28: Individual Dog Housing

Source: (RSPCA, 2020)

- Group Housing:

This is inappropriate for animals who are sick, wounded, or lactating, as well as for shelters with a high turnover rate. In group housing, each dog needs the same amount of space as they would in a separate kennel. Dogs should only be housed in groups following a 10-day quarantine period. It is important to pair animals that get along. Sterilization policies or rigorous sex separation must be implemented in group dwellings. (RSPCA, 2020)



Figure 29: Group Dog Housing

Source: (RSPCA, 2020)

2.11.4. Double Compartment Kennels

These can be indoor/outdoor or indoor/indoor kennels with a pass-through front to back or double stacked cages with a pass-through side to side. (Facility Design, Shelter Animal Housing and Shelter Population Management, 2019)

- The preference is for indoor/outdoor kennels when possible, however there may be a preference for small dog kennels to be indoor/indoor.
- These kennels can be spot cleaned daily and fully disinfected between occupants.

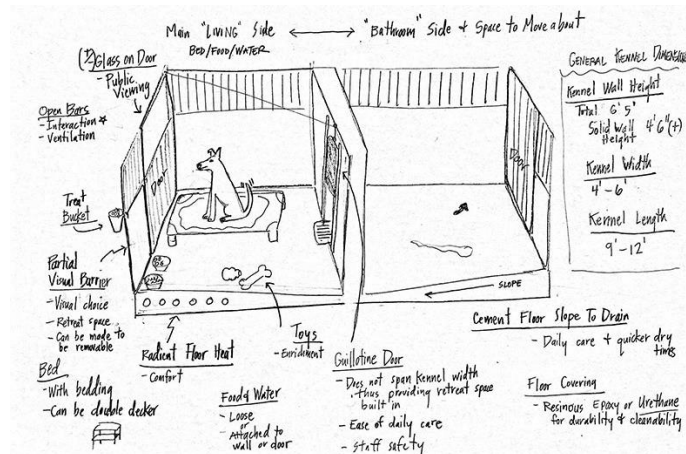


Figure 30: Low Stress Dog Housing- Double Compartment

Source: (Facility Design, Shelter Animal Housing and Shelter Population Management, 2019)

2.11.4.1. General kennel size

- 4' wide by 10-12 feet long divided by a guillotine door pass-through fits most dogs
- Always include a few kennels for giant breed dogs or co-housed dogs, mom and pups,
- 6' wide x 10-12' long divided by a guillotine door pass through
- Ensure the guillotine door is big enough for giant breed dogs
- If it is expected that people will spend time with dogs within their kennels, increase the kennel width to accommodate this need (~5-6' wide or greater)

2.11.4.2. Small dog kennel- Hold/Special Care/ Isolation/ Adoption

- 3' wide by 6' long divided by a guillotine door pass-through
- Limited space for personnel to enter kennel

2.11.4.3. Small dog double stacked kennels- Hold/ Special Care/ Isolation/ Adoption

- 6' wide by 28" deep by 30" tall divided by a side-to-side pass-through
- Recommended: Stainless Steel



Figure 31: Dog Adoption Cages

Source: (Facility Design, Shelter Animal Housing and Shelter Population Management, 2019)

Table 7: Different Kennel Sizes for Dogs

S. No.	Different Size Dogs	Night Box	Kennel	Exercise Area	Minimum Fence Height
1.	Small Dogs (less than 7 kg, e.g. Toy breeds)	900 mm* 700 mm	500 mm* 500 mm plus Run: 600 mm* 1000 mm	3m*2m for one dog (add 1m each way for each additional dog allowed to exercise in that area)	1.2 m
2.	Medium Dogs (7-20 kg, e.g. Cocker Spaniels, Shetland Sheepdogs)	1200 mm* 800 mm	600 mm* 700 mm plus Run: 800 mm* 1000 mm	Exercise Area: 3m*3m for one dog	1.8 m
3.	Large Dogs (20-40 kg, e.g. Labradors, Dobermans)	1000 mm* 1500 mm	800 mm* 800 mm plus Run: 1000 mm* 800 mm	4m*4m for one dog	1.8 m
4.	Extra Large Dogs (>40 kg, e.g. Great Danes, St. Bernard)	1000 mm* 1200 mm	1200 mm* 1200 mm plus Run: 1200 mm* 2400 mm	5m*5m for one dog	1.8 m

Source: (Shakya, 2021)

2.11.4.4. Housing for Dog Adoption– Provide a variety of housing

- Any of the above canine housing can work for adoption areas
- May be combined with canine hold housing for “open selection” type operation and greater flexibility
- Real Life Room
 - Indoor/outdoor or indoor/indoor
 - Generally enclosed with some amount of glass for viewing
 - Room is individually ventilated
 - Accommodate for adopter/dog interaction
 - Sniff holes – allows treats to be administered and for dogs to sniff what’s outside their room space
 - Dutch doors – allows for some interaction to occur without having to take the dog out of its housing space
 - May increase noise in the dog adoption area when upper door is open if housing a barking dog
 - Ideally, set up with amenities that might be found in a home, such as easily disinfect able furniture (cement, plastic, etc.), dog bed, crate, etc.



Figure 32: Real Life Rooms for Dogs

Source: <https://www.sheltermedicine.com/library/resources/?r=facility-design-shelter-animal-housing-and-shelter-population-management>

2.12. Design Goals

In general, what was the standard for many years, "cages" stacked in a long thin standard sized run for dogs, are no longer acceptable for most facilities if a dog stays more than a week or two. Envision yourself forced out of your home due to a weather emergency and staying with lots of people, sleeping on a cot in a school gym floor. Fine for a night or two, maybe a week, but after that you want to go home, or at least to a hotel with your own room and bed. It is very much the same for the dogs one is taking care of in your shelter. What should we do? There are some design goals for happy dogs ready to go to new homes.

2.12.1. For Dogs

1. More space

For dogs: 60-120 square feet, "room" shaped spaces should be given to avoid "run" proportions where a dog's nose or tail touches the walls when turning around and playing. (Bonacci, 2003)

2. Varied space

Dogs come in a variety of sizes, from Chihuahua (smallest breed) to Great Dane (largest breed). The calculation should be done for how many large and tiny dogs the facility will be caring for and provide a mix of area to accommodate the expected canine group. (Bonacci, 2003)

3. More air

Minimum 10-12 air changes per hour, 12-15 air changes per hour is better for odor control (Bonacci, 2003) inside the facility as the dogs have a very strong sense of smell and the foul odour should have no trace.

4. Fresh air

To prevent the transmission of airborne infection, circulate 100 percent outside air into animal areas. Working with a mechanical engineer to return air from "people" space for energy conservation and restricting the total volume of "animal" air by limiting high ceilings for dogs can help to keep the total volume of "animal" air down. (Bonacci, 2003)

5. Place to play and socialize

During severe weather, "internal" courtyards should be constructed for using and to play. On beautiful days, outside gardens and patios for group play and socializing is preferable. Outdoor space is mostly preferred and in hot areas, provide shades for thermal comfort. (Bonacci, 2003)

6. Flexible spaces

Many dogs and cats may present with behavioral issues when they come near to people. Dogs benefit from a variety of forms and sizes of animal spaces, a change in surroundings to work on aggressive tendencies or excessive fear. Moving the animals around in your shelter helps them avoid growing connected to one place and having a harder difficulty transferring to a new home when they are adopted. (Bonacci, 2003)

7. Natural light

Animals, like humans, enjoy having a room with a good view. For their sense of well-being, people and animals need to know always of the day and night. UV radiation from natural light can also be used to sterilize surfaces. It is fascinating for the animals to see and observe events outside, and it keeps them from being bored or lonely. (Bonacci, 2003)

8. Toys/ Treats/ Entertainment

Provide opportunities for employees and volunteers to give food via a "mail-slot" or "chute" as a reward for learning to sit, shaking hands, etc. Providing toys on bungee cords or on a regular basis keeps the animals interested and entertained. (Bonacci, 2003)

9. Comfortable, Safe, Clean

In a longer-term refuge, rooms with no standing water, sharp corners, or severely poisonous materials are essential for animal care. Individual drains off to one side provide the animal with as much dry and clean open floor space as possible. Providing dog futons (cushions) increases staff cleaning time but dramatically improves the animal's comfort. Make sure there's enough room in the laundry room to conveniently wash the blankets. Staff may easily observe if the animal is a chewer or acts out in other ways before he or she goes to a new home by placing furnishings (preferably donated goods) in the rooms. The fundamentals, such as efficient drainage, smooth non-porous finishes, and coved base details, are critical and must not be overlooked. To facilitate thorough cleaning for both dogs and cats, a zone from the floor to four feet high should be as seamless as possible. (Bonacci, 2003)

10. Quiet, Stress-Free Space

Acoustic management is critical for reducing stress in dogs. Other dogs can be irritated by dog barking, even "happy" barking. To isolate barking, dog quarters should be enclosed with glass windows and doors rather than mesh or bars. Double-paned glass has a lower acoustic value than laminated glass, but ventilation must still be provided in these locations. If barking is not the overwhelming feeling when seeing canines, the adopting public is much more likely to linger and see all the dogs and make that successful adoption a reality. Dogs can be taught not to bark if their spaces are set up so that they do not stare straight across a corridor into the space of another dog. By staggering the rooms or providing a visual screen, one can break up the face-to-face experience. Provide a small vent or hole where the dogs may "smell" and recognize guests before they reach the dog's chamber. (Bonacci, 2003)

2.12.2. For the Staff and Volunteers

The needs of the people who work in the shelter should also be considered. Veterinarians, volunteers (dog walkers), and staff that need to feed, bathe and clean-up after the animals will forever be indebted if their work is made easier with a few thoughtful design touches.

- Provide satellite "mini-kitchens" so water is always close at hand, as well as space for a mop, mop bucket, etc. Consider "clinic" sinks for disposing easily of waste.
- Provide wide halls to move about with cleaning carts. (Added benefit to wide halls is an accessible facility, allowing even more people to participate in the animal care.)

- Provide easy convenient workstations for inputting into computer databases, keeping track of behavior characteristics, special diets, exercise etc.
- Provide lockers for volunteers and a place to relax, sit and have a cup of coffee or chat with others about favorite dogs and cats.
- It helps to have some semi-private seating groups for staff interviews and to discuss animals needs with adopters.

2.12.3. For the Public

Prospective adopters need a lot of attention as well. The design should be able to make their first impression a warm and pleasant one and should show-off the successful placements.

- **A nice, lobby space-** provide a glimpse of some dogs, to showcase your neediest animals. Space for a volunteer greeter is a nice touch.
- Places to wait that are comfortable. Not everyone may want to see each animal, so to have a spot for the tired mom or dad to wait while the rest keep searching means more of a chance to make a good match.
- **Computers/ educational activities-** place to tap into regional/ national sheltering networks.
- It is really a plus to provide some informal meeting space for group seminars, staff meetings, and impromptu celebrations.

2.13. Lighting

Lighting is an important element of any location. When considering lighting for a pet shelter, that lighting becomes even more important. Since the goal of any animal shelter is to help pets find their forever home, it is wise to choose lighting that will highlight the animals in the right way. (Lighting, 2022)

2.13.1. Importance

People are more likely to adopt an animal that looks friendly and healthy. The right lighting can help make an animal look like the right candidate for the adopter. Improper lighting not only hides animals away, it also hints at the fact that you may be hiding something else. A well-lit shelter shows a certain level of pride and transparency whereas a dimly lit shelter may be hiding dirty cages, neglected animals, safety hazards, or other issues that might make adopters go elsewhere. Lighting plays a big role in pet shelters. So, how do you create lighting that helps you reach your goal of finding stray animals a new home? Here are a few tips to help you find the best lighting for pet shelters. (Lewis, 2022)

Bright lights encourage buying! While adopting a pet isn't quite the same as normal retail shopping, the principle of how lighting affects the decision to say yes to a purchase still apply.

2.13.2. Design Considerations

Figuring out the right lighting based on your location shouldn't be hard or confusing. Following some basic lighting layout ideas will ensure you get the best lighting for your pet shelter.

- **Sunlight Is Best.**

No matter what we do with artificial lighting, we cannot replace the benefits of natural sunlight. Regardless of the age and quality of your shelter, it's possible to find ways for the pets to experience daylight. For dogs, outside play time or walks will make a positive difference for behavior and well-being. A cation can be a great addition for adoptable cats; they will enjoy sunbathing and exploring a safe outdoor environment. Even if your shelter is extremely limited, look for ways to add a glass door or a tube skylight to let in natural light. (Lewis, 2022)

Daylight benefits:

- Reinforces natural circadian rhythms.
- Improves staff and volunteer productivity and mood.
- Natural UV disinfection for spaces receiving direct sunlight.
- Energy savings for spaces that do not need to rely on much artificial lighting.
- Creates an environment that feels more natural.

- **Replace Fluorescent Fixtures with LED.**

If you're building a new shelter, this is required by energy codes, but many people do not know to replace older fluorescent lighting in their current shelters. Fluorescent fixtures buzz and flicker, and these disturbances are more obvious to dogs and cats than to people because of the way pets see and hear. Properly designed LED lighting converts alternating current to direct current at the fixture, which eliminates buzzing and flickering. As a bonus, LED fixtures use far less energy than fluorescent ones, so lighting replacement projects pay for themselves quickly.

- **Go Dimmable.**

LED lighting fixtures are easy to specify with dimming controls. This is a wonderful feature as it allows shelter staff to brightly light spaces when they are being cleaned or during adoption hours, but to turn down the lights during quieter times so dogs and cats can rest more easily throughout the day.

- **Keep It Dark at Night.**

If it is necessary to keep a light on at night for staff safety, specify a fixture that emits red light. Because dogs and cats do not see colors on the red end of the human visible spectrum, a red light creates a darker space for pets at night, allowing them to sleep normally in the shelter.

- **Use Cool Color Temperatures.**

Lighting can be designed to balance beautifully with natural daylight. Fixtures that are color balanced but tuned toward cooler color “temperatures” will feel more like daylight. We specify fixtures that emit light in the 3500 – 4000 Kelvin range. These are cool but not so cold as to feel institutional. The goal is for spaces to feel clean and crisp! Be careful to specify all fixtures in a similar color temperature so they blend well together.

- **Light Adoptable Animals Well.**

While we like animals to rest well during non-adoption hours, we also want them to leave the shelter quickly and go to their forever homes. Adoption spaces should be lit more brightly than circulation areas where people are viewing, so the animals show well and gain the attention of potential adopters.

- **Placement of the lights**

It is a big one. When choosing the best lighting for pet shelters, where you put the fixture will matter more than the type of light. A common mistake shelter owner make is to place lights down the aisle of the cages while ignoring the cages themselves. This creates a murky, shadowy appearance that makes your shelter seem less appealing while making the animals look less friendly. Place lights above the cages to highlight the animals. This should still provide ample light for the aisle walkway. If you are still concerned about aisle walkway lighting, you can invest in a few lower wattage lights or even rope lighting. Make sure the brightest lighting in the area is the light over the animals since it will draw the focus to the animals instead of the walkway. (Lewis, 2022)

2.14. Landscape for Dogs

Like people, vision and height of dogs is important in landscape. Unlike people who have a 180-degree field of view, dogs have a 250-degree vision and have more side view making more important to make landscape beside walkways also. Landscape differ according to user i.e. people and dogs both of which have different heights of vision. A human having a maximum height of 1.7 m and a dog having a maximum height of 1.12 m. Trees with shorter height like Ashoka and bottle palm would please people, but dogs will only have a trunk view. To solve this, planting shrubs having low height gives a pleasing view to dogs while walking and

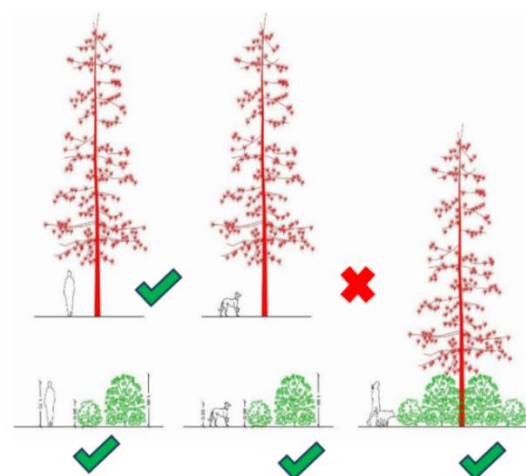


Figure 33: Landscape for Dogs

Source: Narad, 2021

indirectly affect walking time of dogs and people. It will be enjoyed by both the people and animals. The selection of plants needs to be done according to a dogs' likes and dislikes like avoiding plants with thorns like cactus. (Narad, 2021)

2.14.1. Dog Parks

A dog park is a park for dogs to exercise and play off-leash in a controlled environment under the supervision of their owners. Dog parks have varying features, but they offer some typical characteristics. Most dog parks are based on a simple design concept.

- Locate a grassy area.
- Fence the area inside.
- Additions like benches, landscaping, and water fountains are to be made.
- Allow the dogs to go free throughout the area.

Most dog parks are built on public parks and on recreation agencies, and they are often designed by park professionals. For example, Howard Jeffries, a former manager of parks and maintenance for the city of Sanford with a background in ornamental horticulture, had a major role in designing the Paw Park, USA. (Gillette, 2004)

In the modern era, there will be an important role of landscape architects in incorporating the elements of the dog parks into pre-existing recreational areas, especially in the urban areas. According to Martha Burgess, of Judith Heintz Landscape Architecture in New York, "It's a question of context. You could say, 'Oh, no, we don't need that.' and just have an isolated situation. But I think that part of successfully designing a dog park is putting it into the broader context of its surroundings." (Gillette, 2004)

2.14.1.1. Importance of Dog Parks

- Dog owners are also tax payers. Though your city uses tax resources to construct leisure places such as baseball fields and playgrounds to meet the needs of its residents, even if not every taxpayer plays baseball or has children, then the municipality should also meet the requirements of dog owners.
- It helps in creating a sense of community among the people.
- Socializing dogs with other dogs which promotes acceptable behavior, decreased crime, human health benefits.
- There is an increased interest from potential homebuyers recently, who want to move to a community with a dog park.

2.14.2. Design Considerations

a. Location

A dog park's location is crucial to its success. If the chosen location for the dog park is unsuitable for people to visit under normal circumstances, it will be equally unsuitable for

individuals who own dogs. It's good to have a little dog park. However, most municipalities discover that their tiny dog park is insufficient to accommodate all their guests, and they must immediately construct a new one. You can't have just one small dog park, like you can't have just one potato chip. A dog park must be at least half an acre in size to be considered small. A dog park should be at least one acre in size with enough parking, electricity and running water. (Edition, 2016)

b. Enclosure

Every dog park should be surrounded by a fence. The dogs should be contained but not harmed by the fencing. This means that the bars should not be so broad that dogs' heads get stuck in them or that dogs can easily escape through them. It should be tough enough to withstand a determined dog chewing on it and free of hazardous dog coatings. Many types of fencing will work, but the best fencing option that will work and is reasonable is a six-foot-high chain link fence. Ensure that the fencing chain material is tight to the ground and stays flush with the ground so that dogs cannot push beneath it.

Dog park entrances must be properly planned to guarantee that dogs inside the dog park do not easily escape when entering and exiting. Experts propose using "doggie airlocks," which are twin gates with a transition space between the outside and inner gates.



Figure 34: Doggie Airlocks

Source: Edition, 2016

c. Vegetation

Plants should not be toxic as dogs eat, lick, and sniff everything. Mulched wood and wood chips are a fantastic, inexpensive, and environmentally friendly option. Rubber woods are poisonous to dogs and should not be used. Natural shades like trees, artificial shades like canopies, or a combination of both can be done. Both humans and dogs require shade.

d. Surface

Surface options must be made such that it is easy to clean and tolerant of a certain amount of dog waste. Gravel, concrete, and asphalt are not advised since they cause discomfort to the dogs' feet and become excessively hot during sunny days. Because artificial turf can contain microorganisms, careful thought should be given when choosing it. It also absorbs odors and makes excrement removal difficult. Artificial turf should only be used for rooftop and indoor dog parks.

e. Signage

Signage should be displayed both outside and inside the dog park's entrance. It should clearly state the dog park rules, what to do if a dog bites someone, and what behavior is regarded improper and will result in the dog and its owner being evicted. In a dog park, rules are vital, and you'll need to display them in multiple locations to enhance the likelihood that people will read them. (Edition, 2016)

f. Water Supply

Every dog park should have enough of fresh water for the dogs. Dogs do not sweat to release excess heat like humans do, and if they do not have access to enough of fresh water to drink, they will quickly become dehydrated. Human visitors will also require water. Installing a dual-species water fountain with a water fountain on top for people and a water fountain at the base for dogs is the ideal approach to supply water for both species. (Edition, 2016)

g. Places to Sit

Human seating can be as extensive as desired, but tables and picnic tables are not permitted, as food should never be brought into a dog park. People should eat outside of the dog park if they want to eat. Many dog parks are beginning to limit the use of plastic chairs because people leave them behind, they shatter, and they don't withstand the outdoors. Seating that is permanently built, such as park benches, is a far better, safer, and more durable option. (Edition, 2016)

h. Waste Removal

A waste station should be set up with a trash can and a poop bag dispenser. According to experts, many people will not bother if they must walk a long distance to fetch a poop bag or dispose of a poop bag. Furthermore, if they must walk a long distance from the excrement to obtain a bag, they may not be able to locate the poop when they return to the region. Thus, installing three times as many waste stations as expected will increase the chance of cooperation with getting people to scoop the excrement. (Edition, 2016)



Figure 35: Signage at Dog Parks

Source: Edition, 2016



Figure 36: Waste Station

Source: Edition, 2016

i. Lighting

A dog park will be open before sunrise or after sunset. Many dog owners work full-time and won't be able to get to the dog park until after work. The parking lot, gates, and inside the dog park all require lighting. Dog owners will not feel comfortable and will not be able to find their dogs' droppings to pick it up if the inside of the dog park is not well illuminated. (Edition, 2016)

2.15. Spaces for Healing

Health is “related to the encompassing environment in which the entire cycle of human life unfolds.” However, we must evaluate human and companion animal life cycles. A few healing theories promote and encourage health as it pertains to mental as well as physical wellbeing: the psychobiology of space, teleology of space, and salutogenesis in space.

The various architectural principles derived from these theories aid in creating spaces that promote rehabilitation and increase levels of interaction, therefore encouraging mutual mental and physical healing. Each of the principles can then inform specific spatial elements that are necessary to foster this type of environment and the programs and interactive and healing spaces. (Nagel, 2018)

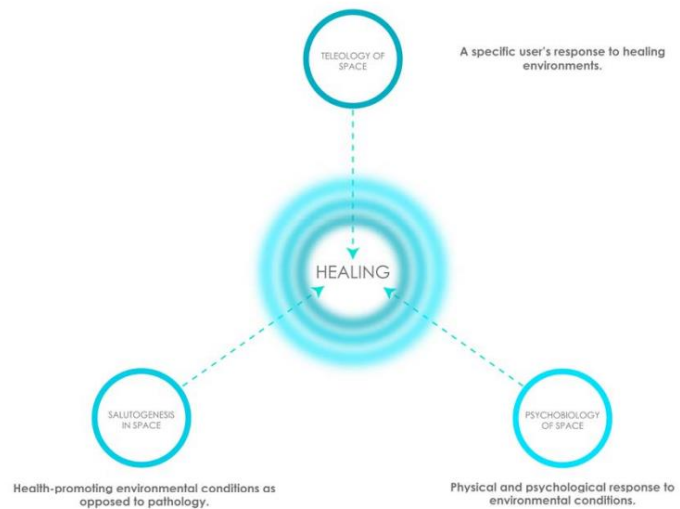


Figure 37: Healing Theories that Foster and Create Healing Environments

Source: Nagel, 2018

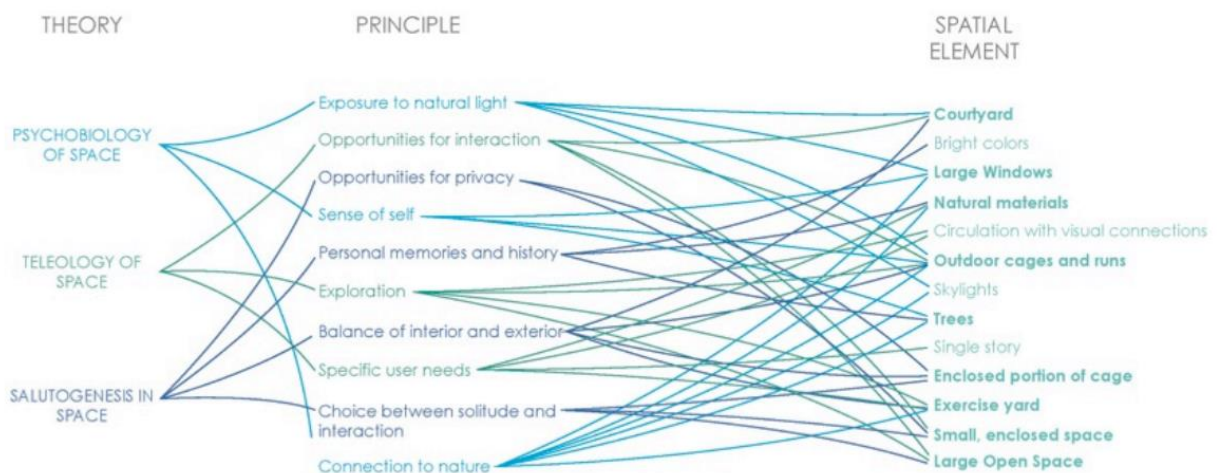


Figure 38: Theories, Principles, and Spatial Elements of Healing

Source: Nagel, 2018

2.15.1. Psychology of Space

The psychobiology of space, meaning the evaluation of one's self in space and the interaction of the psyche, must also be addressed as we create a sense of self through the references to our environments. Without relationships among humans and other living beings in conjunction with the environment and external influences, one cannot create a sense of self. We, like animals, exhibit explorative behavior: the search for the new. Humans are often drawn to some type of change or curiosity that compels us to investigate space as it reflects on our own being. (Nagel, 2018)

This change can also be seen in exposure and access to natural light and outdoor connections. Large windows and openings bring with them a sense of openness as well as this connection to the exterior. Maintaining a visual connection to the outside is important for human and animal health, for it provides us with the information we need to experience changes in the time of day, weather, sunlight, and seasons. Nature is known to be a calming and healing agent, and light specifically may have an emotional effect on both animals and humans. For example, reflected light from water can create a relaxing and warm atmosphere as it interacts with interior surfaces. Nature answers the need for fulfillment in an ideal way to stimulate primitive, balanced experiences of self. (Nagel, 2018)

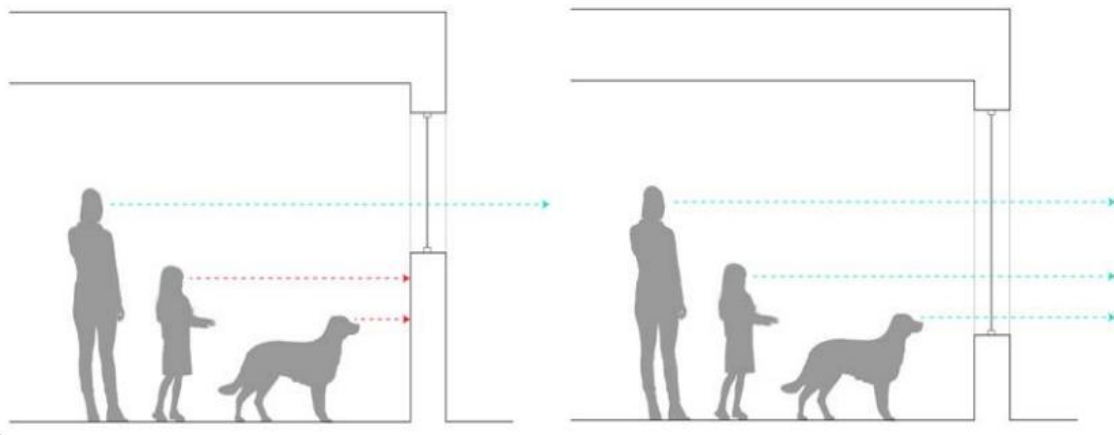


Figure 39: Window Opening Accommodation for Both Humans and Animals

Source: Nagel, 2018

2.15.2. Teleology of Space

The teleology of space refers to the significance of space for specific needs to foster the healing power of that arrangement based on the many demands of the self together with the surrounding environment. A space must achieve a sense of being and will provide basic needs and achievable offers. It may also become more complex in its provision of needs based on the user demographic, for example, age, gender, social endowment, time of use, and special wishes. The concept of exploration comes into play to satisfy the basic need of mental life, for we need this type of space in order to stimulate meaningful brain activity. On the other hand, we do need a sense of life, meaning recognizable elements and habitual activity, as we also interact in these spaces and must account for human as well as animal encounters. However, public spaces with public encounters must still protect in some way without limitations or restrictions.

It is possible to foster social interaction in a safe and enclosed environment while allowing for a certain level of freedom. (Nagel, 2018)

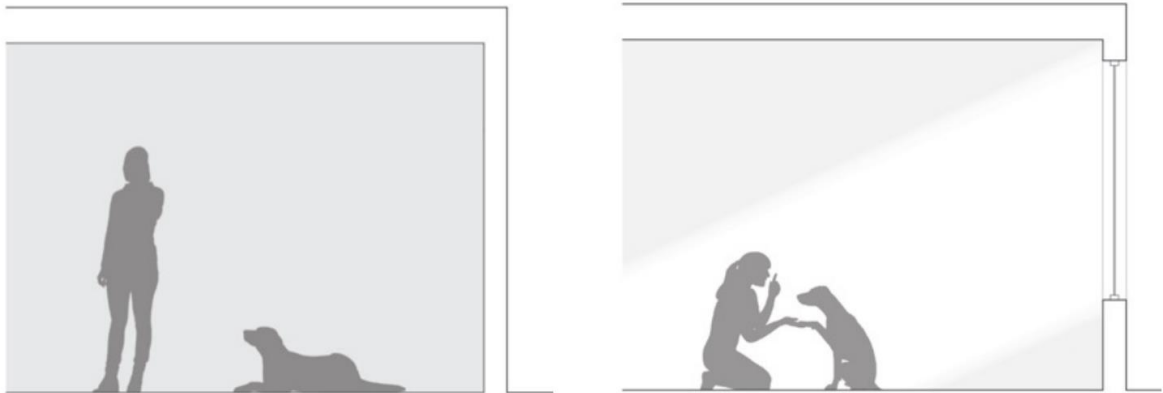


Figure 40: The Correlation Between Natural Light Exposure and an Increase in Energy Levels and Interaction

Source: Nagel, 2018

2.15.3. Salutogenesis in Space

Salutogenesis is another theory that refers to the healing power of space, for it relates to the preserving of health by drawing on general internal resources rooted in coherence and resilience. In regard to the manageability of outer and inner environments, private space requires this balance more than others but usually it is not achieved. The space must include the choice to be away from others or the breaking up of spatial components to allow occasional proximity to others. This factor holds true for most humans, though children must be considered as well. The needs of the self-change with age, for a child's needs are different from the needs of an adult or an elderly person. Children have yet to acquire the ability to adjust quickly to new conditions, so their spatial accommodations must be sensitive to a child's mindset. A space that is enticing to a child may contain diverting activity, fantasy, and a sense of liveliness; children often look for something special that they may make their own and understand. The nature of the environment in conjunction with the interactions that take place within will add a level of comfort and improvement of mental health. With a preliminary understanding of how humans and animals react in certain environments through these healing theories, we may begin to evaluate an added complexity in which architecture promotes rehabilitation. (Nagel, 2018)

2.16. Veterinary Clinic

“A ‘Veterinary Hospital’ or ‘Animal Hospital’ is defined as a place used to diagnose animal diseases or disorders, surgically or medically treat animals, prevent animal disorders etc. Treatment may include keeping the animals on the premises for treatment.” (Consultancy, Veterinary Hospital Planning and Designing, 2019)

Designing healthcare facilities run together with highly specific rules and regulations that ensure safe, hygienic and well-functioning medical environments, and design considerations for veterinary practices are even more specialized. In these spaces, designers not only have to think of patients and staff, but also the practical and hygiene factors that come into play when animals are involved. Similarly, the patient journey in animal healthcare facilities extends beyond the care services that are provided in other healthcare spaces. (Cadena, 2021)

2.16.1. Design Objectives and Building Regulations

The first major consideration in the design process is the operational nature of the practice or clinic. Factors like which animals will be cared for, whether space is needed to accommodate animals overnight and how many examination and surgical rooms are needed, will steer the direction of the design. In the design and construction of veterinary practices, the specific building regulations and health codes of the country or area need to be followed closely to avoid problems in the future. Some of the health and sanity considerations in animal care facilities might include:

- a construction that prevents animals from escaping or injuring themselves;
- enough provision for the hygienic disposal of waste;
- examination rooms that are separated from the office or reception area;
- walls, floors and fixtures made of materials that are easy to clean and disinfect, and does not accumulate dust or germs;
- public entrances that do not run through another business;
- hygienic storage and lock-up facilities for medicine and health equipment, along with a sanitary preparation area for food, and
- enough storage and disposal facilities for animal carcasses.

2.16.1.1. Safety and Hygiene

Strict health codes need to be followed in vet practice design to maximize the hygiene of the space and protect the health of both animals and people. Providing separate entrances and/or waiting areas for sick and healthy animals will reduce the risk of spreading germs. Ensuring that animals are isolated as far as possible by providing a spacious waiting area with various zones for different animals, will help prevent potential conflict and stress among pets. Signage and demarcation tools can effectively be used in this regard to promote better wayfinding within the facility and keep animals separated from each other.

In the design of veterinary practices, materials are an important consideration. Designers can enjoy more freedom in the creation of office areas, waiting rooms and any other retail or entertainment additions to the space such as a coffee shop, pet food/toy store or children's play area. The materials used in the design of these zones should facilitate a warm and welcoming environment and allow for quick and easy cleaning to offer hygiene benefits.

Consideration should also be given to noise and odour control. Smart HVAC systems must be incorporated into the design to promote thermal comfort and air quality inside the building. A well-functioning air ventilation system will ensure any odour is eliminated instantly to avoid

an unpleasant experience for clients and staff. Noise control is vital to the patient journey and overall experience at the vet. A loud barking dog in the waiting room won't help to calm the nerves of another four-legged patient in the examination room next doors! Acoustical ceiling tiles and interior walls placed in the building structure will help to create sound barriers and decrease noise.

2.16.1.2. Flexibility

Vet practice design needs to be future-proof to leave room for changes and expansion opportunities. More and more vet practices are adding extra revenue streams such as dental cleanings, grooming, daycare services and retail/hospitality offerings to invite clients to visit the facility for reasons other than medical care for their pets. Modular and flexible design allows designers to adapt the veterinary healthcare model as market needs evolve.

Healthcare facilities are also increasingly employing telehealth services and curbside pickup/drop-off options to regulate traffic on-site. An animal care facility that offers daycare services for pets will benefit from a separate drop-off/collection point to prevent congestion inside the building, as well as a safe and isolated outdoor area where animals can play throughout the day.

2.16.1.3. Patient Journey

The design of any healthcare facility needs to function as a tool that removes stress and anxiety from a potentially traumatic and taxing experience. The reception/waiting area is the first step in achieving a peaceful environment for both patrons and staff. Consider the latest trends in healthcare design that take inspiration from home and wellness spaces to create calming conditions: the use of natural elements, earthy tones, comfortable seating, bright colors and warm lighting. These design techniques are all aimed at elevating the patient journey for both people and pets, as well as delivering a serene working space for staff at the clinic or practice.

Designers are increasingly prioritizing sustainable design and building practices — natural light, energy-efficient operations, plants and greenery indoors, and reclaimed and locally sourced materials and furniture. These natural elements are proven to create tranquil environments to help keep patients calm before and during their appointments.

The layout of the practice will also contribute to the comfort of the patient journey as well as workflow and productivity. The floorplan and means of relaxation (seating areas, a play area for kids, a water drinking station for dogs/cats etc.) will dictate the traffic flow. Where will people gather in the waiting zone? Will a person waiting with their dog need to pass by ten other dogs to reach the exam room? What about the pathway to the bathrooms, or a kitchen area for staff? The waiting zone needs to be as peaceful and uncluttered as possible to minimize the risk of chaos or discomfort.

2.16.1.4. Space

Is each area big enough for its required purpose; is there enough space to be able to separate the veterinary clinic into rooms each with its own function? and to allow for cats and dogs to be housed separately? Is there enough space for storage of supplies and equipment? (Robinson, n.d.)

2.16.1.5. Environmental conditions

Any clinical space such as the animal wards and surgery rooms should be kept at a higher temperature for animals undergoing surgery or recovering from GA and for sick patients on treatment. There should be enough and appropriate ventilation, open windows and doors do not help to maintain any warmth and could perhaps be an easy escape route for your patients. (Robinson, n.d.)

2.16.2. Designing a Veterinary Hospital

The following is a list of the rooms and facilities usually required in a Veterinary Hospital: (Consultancy, Veterinary Hospital Planning and Designing, 2019)

2.16.2.1. Reception room

- The reception room is planned to seat four to five people and their animals per veterinarian. This number will decrease per veterinarian as the number of veterinarians increases.
- It is extremely important that in the original planning this room not be made too small, for in the case of future expansion, this space, with additional furniture, should be adequate to accommodate the additional patients.
- Many animal hospitals use a system of stalls in the waiting room. This stall is usually 2'-6" wide and 4'-0" deep, in which the owner and the animal sit and wait until called by the veterinarian.

2.16.2.2. Business office

- The business office should be accessible to separate entrances from the reception room and the hospital in general. It may well adjoin the staff room.
- In the business office should be kept the inactive records. Space in the business office or the staff room should be available for staff members to use while completing medical records.
- Private office
- This room is a small space where the veterinarian can carry on private conversation, study and relaxation.
- The office should be isolated from the clients, but readily accessible to the business office and the examination room.

- The veterinarian should be able to reach this room by a secondary entrance in the building and not be forced to walk through the reception room.

2.16.2.3. Examination room

- The examination room is an area where veterinarian and client can discuss and examine the patient, as well as treat minor ailments. 90 to 120 sq. ft. of floor area are usually adequate for this room.
- Efficient operation requires that 1-1/2 examination rooms per veterinarian should be provided. This room should contain an examination table, supply cabinet, and sink; it may also contain chairs for the client and a writing desk for the veterinarian.
- The examination room should be made as quiet as possible to facilitate examinations. It should be easily darkened so that the eyes may be examined.

2.16.2.4. Work Room– Laundry

- The work room is usually provided in large hospitals.
- It is used for dressing wounds, taking fecal, blood, or urine samples, and other miscellaneous tasks.
- Preparation Room
- The preparation room is used to prepare the animal for surgery.
- This room is also used for setting broken legs and applying splints, both wooden and metal. Therefore, it should be equipped with a small band-saw vise and a work bench on which both wood and metal may be worked.
- It should be adjacent to the surgical ward, recovery ward and X-ray room.
- The wall between the preparation room and the recovery ward should be of clear glass so that the person working in the preparation room can watch the dogs in the recovery room in case they regurgitate.
- The wall between the surgery and the preparation room should be equipped with a clear glass panel also so that the veterinarian can supervise the work going on in the preparation room from the surgery.

2.16.2.5. Surgery Room

- The surgery should be adequate to accommodate major operations.
- The surgery room should be air-conditioned, and if separate units are used, temperature and humidity should be the same as that in the preparation room and recovery ward.
- Adjacent to the surgery should be a scrub-up room where those concerned with the surgery may cleanse themselves properly.
- Dark Room & X-Ray Room
- In a small hospital, X-ray equipment may be small and may be placed in a room which is not used to a great extent. However, in a large hospital a separate room is necessary.

- The X-ray room should be so located to be readily accessible to the in-patient areas and as close as possible to the preparation room and surgery.

2.16.2.6. Scrub-up Room

- The scrub-up room should contain two scrub-up sinks equipped with knee operating faucets and disinfectant material nearby, operated by either foot, knee or elbow.
- Also, there should be a place where sterile brushes may be stored adjacent to the sinks.
- There should be a small window between the scrub-up room and the operating room. This is desirable for the veterinarian to observe what takes place in the operating room while he scrubs.

2.16.2.7. Laboratory & Pharmacy

- The space allotted for the laboratory work depends upon the size of the hospital and the amount of actual laboratory work that the veterinarian plans to do. Many hospitals combine this room with the pharmacy, and sometimes it is also the work room.
- From this room much of the basic information on the patients' health and well-being is brought forth. Therefore, it should be well planned and well equipped.
- The pharmacy should be convenient to the examination rooms and the main hospital area. Space will be required for a small refrigerator and a safe if narcotics are to be used. The pharmacy should be placed in the care of a responsible person so that sufficient drugs and stocks are kept on hand.

2.16.2.8. Wards

- The recent trend in wards has been that the wards be kept small. A ward of ten to twelve animals is considered ideal.
- In a small ward the animals are less likely to be disturbed and there is less contact between patients.
- Much of the noise can be eliminated if the cages are arranged so that the animals cannot see one another.
- It is recommended that a space of at least 4'-6" to 5'-0" remain in front of the cage for access.

2.16.2.9. Exercise Runs

- Adjacent to all wards a place should be provided where the dogs may be allowed to exercise. In the isolation ward where the animals are confined, an area should be provided for their exercise.

2.16.2.10. Grooming & Bathing Room

- The size of this room will fluctuate considerably in accordance with the veterinarian's attitude toward this phase of practice.
- This room should be adapted into the plan in such a manner that the animals using this service must not use the reception room. The animals could be taken to this room and placed in a cage and left.

2.16.2.11. Cages

- There is no one answer as far as the ideal cage is concerned. There are as many cage designs as there are veterinarians.
- The materials used for the cage construction should be easily maintained, tough, hard surface, and scratch resistant.

2.17. Spaces for Mourning

Death is a universal phenomenon. Its existence is one of the defining characteristics of life itself, yet dialogue on the matter that is often avoided. Death is a destination we all share, and it makes us realize our mortality and eventually leads us to acceptance and better understanding. For it is through this process of acceptance and closure where the rare interaction of life and death takes place that we are forced to encounter and contemplate the bond we shared with the deceased, be it human or animal. The human animal bond has existed since the beginning of civilization, but the bond which exists between a pet owner and his companion animal has changed over time. When a family pet dies what does one do? Either its disposed of or buried in a yard. Why is this process so different from when our relatives pass? The corpse, in a very physical way, is offensive to sight and smell. What is to be done with the body? Over time, many rituals have been developed around the process of caring for the dead. These rituals are necessary for helping people mourn and for dealing with grief. Grief is the direct result of this pain experienced and is in constant need for a cure. This cure is achieved through mourning. Mourning enhances our ability to deal with the pain. As a result, the mourner and the deceased take similar paths; both break away from society. (Arora, 2020)

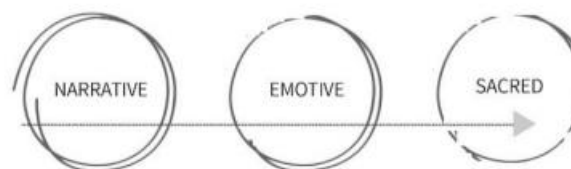


Figure 41: Conceptual Identity of Spaces

Source: Arora, 2020

The eventual death of a pet raises a series of overwhelming personal questions about whether such an emotional, loving animal “also has a soul that would eventually find its place in heaven”. Grief is a natural response to any loss and this can have a deep impact. The funeral process has a multifaceted impact on the grieving process people endure after the passing of

another. During this time, people are filled with a variety of emotions which leads to confusion and ultimately results in uncertainty which is the underlying phenomenon of death. Although this notion of animals being more as family members is accepted much more these days, many pet owners feel grieving for a pet cannot be openly expressed and acknowledged or mourned. This inability to express their grief makes grieving the loss of a pet a type of disenfranchised grief. (Arora, 2020)

2.17.1. Pet Loss and Death

The procession of a deceased pet on an individual and personal level for the pet owner is the foremost focus of the program. It is important to strengthen the connect at this stage itself in order to form a strong bond at a community level. Therefore, it is essential that architecture not only makes monumental gestures but also create a meaningful series of spaces at the human scale. At the center of the research, it is important to understand the basic segregation of spaces which will govern the layout of the built form. These will serve as overarching themes that unify the three elements. (Aroraa, 2020)

The journey begins with the procession towards the site. The crematorium at the highest level serves as the users first destination where the process of death begins. This is the beginning of architecture and its relationship with the ritual: the perimeter creates a center surrounded by a water body where the deceased is washed and carried further into a sacred space. As the cremation chambers are approached, the mourner will find themselves in an intermediate zone between the city and the constructs of a man, nature and the purifying lake. The activities observed from a car window will be in opposition to those within the car. This initial sequence of entering into parking will be a duality of view and metaphor towards the concerns of daily life that seem far off. Upon arrival, the mourners will enter the parking and be separated from the others as they leave a larger social context to that of something between the present and eternal. The entrance will be a long linear stretch that connects the main cremation chambers and smaller mourning spaces. (Aroraa, 2020)

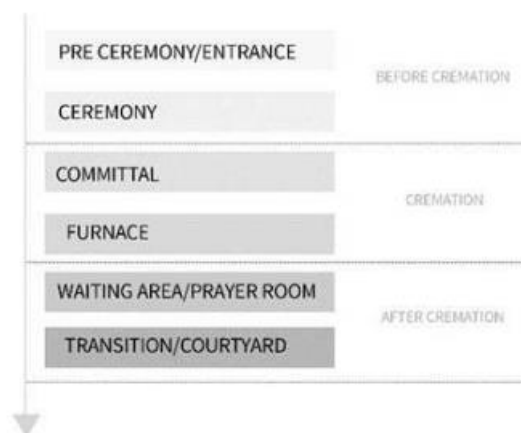


Figure 42: Sequence of Spaces

Source: Arora, 2020

2.17.2. Cremation

This space will house a cremation space that would only cremate domesticated animals and stray dogs. The typology can be divided into two categories:

1. **Electrical Incineration:** the deceased is placed in a cremation chamber and subjected to intense temperatures. This is further divided into two ways:
 - **Communal Cremation:** The pet is placed into the chamber along with other animals and are cremated together. This may be employed in the case of strays where the level of emotional attachment is lower.
 - **Private Cremation:** At a time, only one pet is placed in the cremation chamber which provides complete segregation and assures the return of ashes. The process cannot be viewed by the owner.



Figure 43: Pet Cremation Incinerator

Source: Arora, 2020

2. **Burial Architecture:** This typology taps into another part of architecture where the user may prefer to bury the deceased pet's body. By employing architectural tools, this space can be perceived as a sculpture or pavilion where the owner may visit to remember their companion animal.

The next program in the sequence of spaces is the remembrance area. This is also an essential moment when larger groups from cremations may break down into individuals or sub groups. This area is also the first step where the user is in direct contact with conscious architecture and this heightened awareness can be used as an opportunity to carefully detail the built, focus on the materiality, human scale and most importantly infuse nature into the area. The presence of nature suggests a meditation space that helps the mourner take a moment and reflect their time with the pet. This area signifies the importance of the ritual and the value of the deceased pet in your life. The remembrance garden will help users reflect on their journey and quietly grieve their loss. (Aroraa, 2020)

2.18. Sustainability Approach

2.18.1. Noise Reduction

The problem of noise can be seen throughout every dog shelter. Noise cannot be controlled fully but can be dampened to some degree. Passive design of noise barriers helps in creating effective and sustainable noise barriers with minimal use of energy resources which helps in the sustenance of the project. Some of the passive design techniques that can be adopted are discussed below.

2.18.1.1. Boundary Wall with Vegetation

A boundary wall can achieve a 5-dBA noise level reduction when it is tall enough to break the line of sight from the road. After it breaks the line of sight, it can achieve approximately 1.5 dBA of additional noise level reduction for each meter of barrier height. In addition, its length must extend far beyond the area to be protected to avoid its performance being compromised by noise diffracted around the ends of the barrier. Hence, boundary walls higher than line of sight from road level had been provided. (Johns, 2018)



Figure 44: Retaining Wall that can act a Noise Barrier

Source: Building and Décor, 2018

2.18.2. Layers of Vegetation

Trees are known as the “natural noise blockers.” In this type of project, creating a buffer zone is an essential part because the odor and the noise has to be controlled. So, using air filtration plants in atleast 4 layers as recommended by NASA and suitable in our climate is a sustainable way of planting greeneries.

- Tall Tree Layer
- Low Tree Layer
- Shrub Layer
- Herb Layer

Trees act as noise barriers and reduce pollution through phenomenon called sound attenuation, which is the damping of sound. In general, noise attenuation happens when sound waves dissipate over longer distances until there is no energy left to vibrate the air. Trees attenuate noise by absorption, deflection, refraction and mask.



Figure 45: Vegetation as Barriers

Source: https://www.pinterest.com/pin/219409813083823545/?nic_v3=1a2X0PkBg

2.19. Inferences from Literature Review

The main objective of the literature review was to understand the basic frameworks of animal welfare, the historical context, problems, complications and scenario of the present, the role of architecture in creating healing environments for animals and to study the spatial elements to instigate the relationship between Huma-Nature-Environment. The inferences drawn from the study in summarized below:

Table 8: Inferences from Literature Review

S. No.	Theories	Principles
1.	Ideologies in Shelter Design	Whole life care extended medical care, proactive vs reactive care, user friendly, participatory reduction of stress
2.	Canine Psychology	Dominance, competitive aggression, social, explorative, olfactory interconnection
3.	Psychobiology	Evaluation of one's self, connection to nature, exposure to light
4.	Teleology	Visual connection, opportunities for interactions, exploration
5.	Salutogenesis	Choice between solitude and interaction, opportunities for privacy, personal memory and history, balance of interior and exterior
6.	Environment and Behavior	Visual and auditory separation, comfortable and defensible spaces
7.	Humane Landscape and Color Therapy	Healing and balance, mood lifts, boost mood and efficiency, enhance aesthetics, facilitate fund raising, creating sense of place



CASE STUDY

CHAPTER 3

National Case Study

S.No.	Name	Location
1.	Sneha's Care	Karyabinayak, Lalitpur
2.	Kathmandu Animal Treatment Center	Buddhanilkantha, Kathmandu
3.	SPCA Nepal	Hattigauda, Kathmandu
4.	Vet for Your Pet Clinic	Chandol, Kathmandu
5.	PAWS- Play and Stay	Suryabinayak, Bhaktapur

International Case Study

S.No.	Name	Location
1.	Palm Springs Animal Care Facility	Palm Springs, USA
2.	SPCA of Texas	Texas, USA
3.	Dogchitecture: Dog Shelter	Moscow, Russia

Regional Case Study

S.No.	Name	Location
1.	Blue Cross Society	Pune, India

National Case Study

3.1. Sneha's Care

3.1.1. Overview

Location: Srijana Marga, Karyabinayak, Lalitpur

Area: 4,070 sq.m. (8 Ropani)

Establishment: 2014 A.D.

Founder: Mrs. Sneha Shrestha

No. of Staffs: 13

No. of Dogs: 167

Type of Housing: Group Housing



3.1.2. Introduction

Sneha's Care is a non-profit organization that aims to protect streets dogs and animals from torture, cruelty, and ill-usage of any kind. Established in 2014, the facility is in Srijana Marga, Karyabinayak, Lalitpur. But, the communication office is in Jawalakhel, Lalitpur. The communication office handles all the calls for aids and treatment. It has started several missions for the welfare of animals and street canines. The organization was established to manage the number of street dogs and other animals and to provide their medical needs. The group believes all types of animal exploitation, including factory farming, should be prohibited in the activities of every person, company, and government.

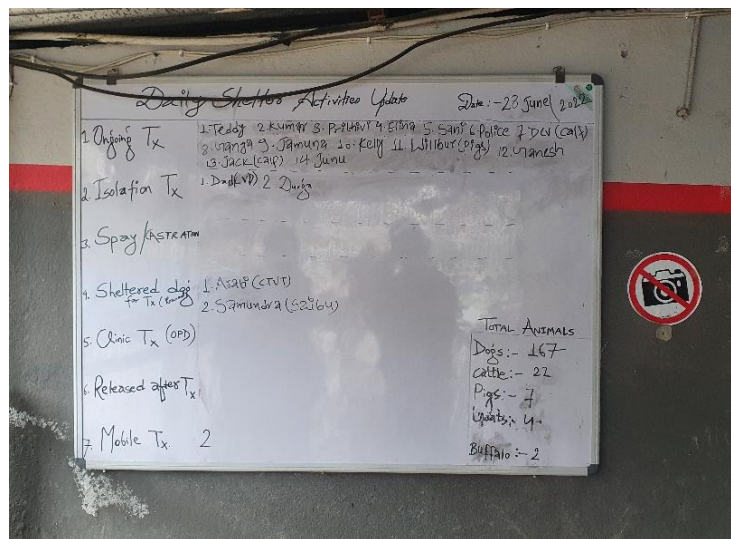


Figure 46: Sneha's Care Information Board

Source: Author

3.1.3. Reason for Selection

- One of the most popular animal rescue shelters in the country.
- The facility answers to rescue from various parts of the valley.
- The facility was recently temporarily closed. So, it was chosen to see what are the problems that are occurring.

3.1.4. Site and Surroundings

The facility is located at a peaceful area away from the main road surrounded by few residential buildings. The entry to the facility is guided by a 12' unpaved path. The site is west oriented. Most of the structures on the facility is constructed of Hollow Cement Blocks and steel post and CGI structure with trusses. The open landscape on the south of the site is just an open field with a semi open shed.

Many dog cages are present on the site for different types of dogs. The site is located on a contoured land having three distinct levels. The lowest one consists of the generator space, quarantine space and the cage for old dogs. The middle one consists of the store, reception, clinic, food storage, kitchen and the space for paralyzed and old dogs. The upper level consists of the space for old and new dogs.



Figure 47: Access Road to the Site

Source: Author

3.1.5. Functional Module

The facility works on a basic module following certain procedures for adoption as well as the treatment of dogs. The facility operates on the following policies:

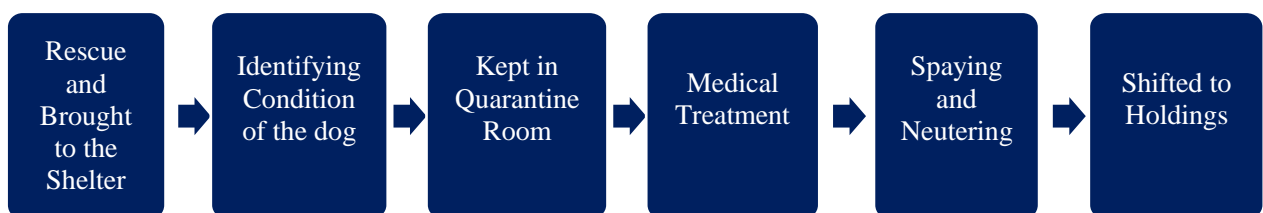


Figure 48: Sneha's Care Operating Policies

Source: Author

3.1.6. Procedure for Treatment and Care

The facility follows the following procedure for the adoption and providing shelter for the dogs and for the treatment for the dogs:

- The facility receives calls from different parts of the valley about the animal that needs rescue.
- The mobile treatment team go to site based on the call received and tries to treat the animals in the site if the problem is not that severe.
- If the condition of the animal is severe or if the treatment will take a long time, the Rescue team reaches the site with an ambulance for further treatment on the facility itself. The person who called the facility or the member of the society must sign a consent form for the dogs to be taken into the facility to avoid any legal issues later in the road.
- The dog is then kept in a quarantine cage to avoid transmission of any diseases. The dogs are kept on quarantine for about 7-10 days depending on the condition. The dogs are then examined on the quarantine cage and treated there.
- After the dog is placed on quarantine, the dogs is then placed on different cages for about an hour for an additional week to check their compatibility with other dogs in the cage as there is an “alpha” dog in each cage and must be accepted by them in order for them to fit in.
- The dog is then shifted to the cage it is most compatible with and is looked after in the facility until it finds a home.

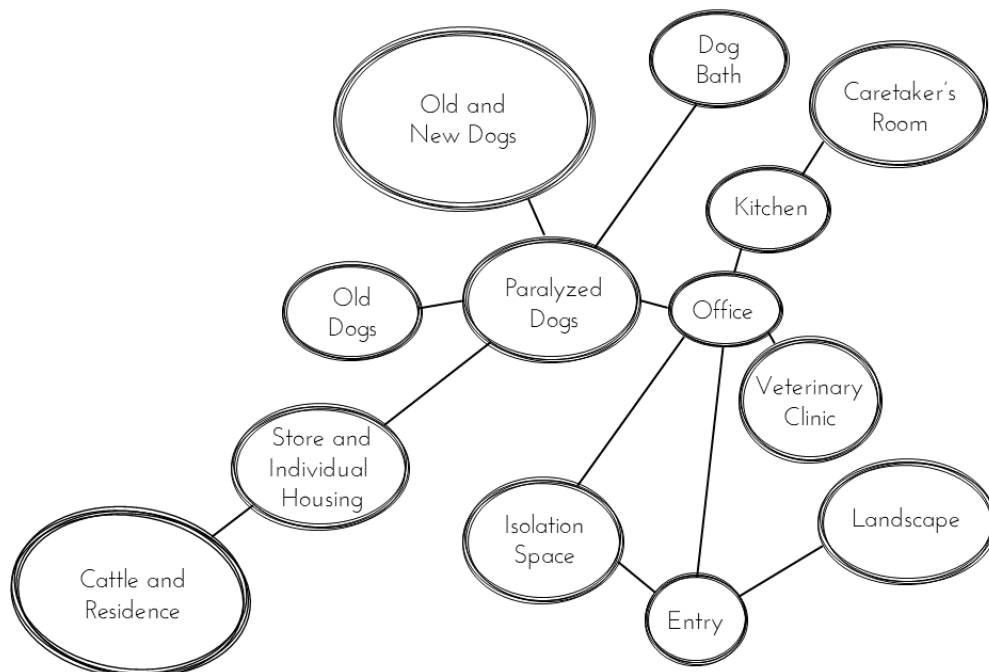


Figure 49: Sneha's Care Space Bubble Diagram

Source: Author

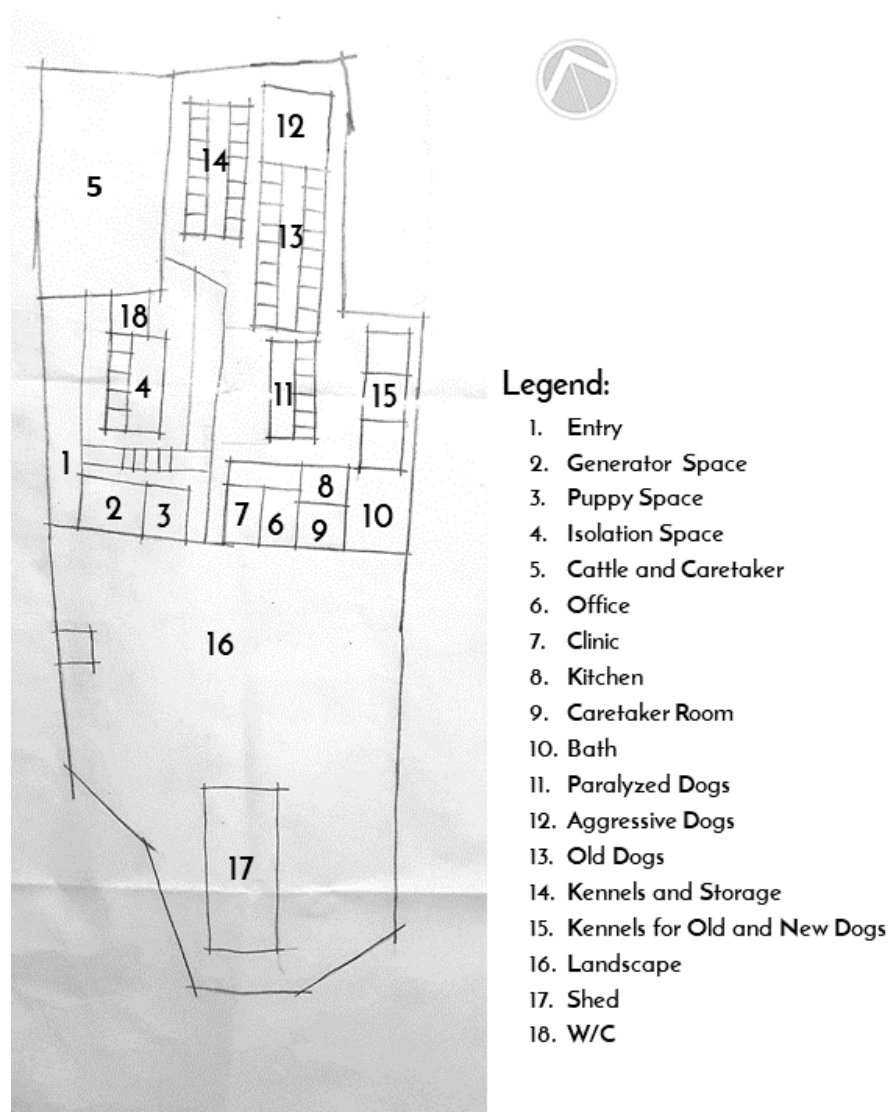


Figure 50: Sneha's Care Master Plan

Source: Author

3.1.7. Adoption Procedure

The adoption of dogs is a very delicate and a sensitive process. The selection of the correct family for the dogs can be crucial for the dogs and finding them a new family that treats them as a family member, not as a guard dog or as a hobby. For the proper selection of family, the facility selects the family based on the following procedures:

- **Visit Place**

The family that wants to adopt the dog must visit the facility and must interact with the dogs. The staffs personally check out how the family members interact with the dogs and treat them.

- **Interview**

The Family then must go through an interview with the facility Incharge. The family will be asked about their perspective about dogs and why they want to adopt the dog. The dog will not be handed over to the family if the dog will act as a guard dog or if it is to be tied to a leash for most part of the day.

- **Form and Legal Procedure**

The family then must fill up the form and complete the legal procedures to adopt the dogs. Adopting the dogs should have the same amount of considerations as adopting a child, to ensure the dogs' safety. The facility also allows the dogs to find a home in a foreign country if the dog find a foreigner as an owner and makes legal arrangement for the dog to travel.

- **History of Family**

The family history is also analyzed for the adoption of dogs. The factors like: if the family previously owned dogs or not, or if any of the family members are allergic to dogs are analyzed for the study.

- **Follow-Up**

After the dog is handed over to the family, the facility conducts the follow up procedure to verify whether the family is treating the dog as intended or not. The procedure continues for 2-3 months with surprise visits. The family is then finally given the responsibility of the dog if the facility is convinced the family can take good care of the dog and treat them as a family member.

3.1.8. Design Expression

The facility was built as per the requirements. The facility started as a temporary structure and developed as the number of animals grew. There are no specific design considerations followed, but some considerations are made as per the behavior and requirements of the animals. The construction is done to sustain the dogs and the overall spaces created are moderate for the animals and their wellbeing. The following are the design expression of the facility:

1. Type of Housing

The facility follows the design concepts of group housing for the dogs. The dogs are kept in groups. There are separate kennels for different groups as there is an "alpha" dog in each group, which is the leader of the bunch. The new dogs are placed into each group to see their compatibility in the group. The dogs are placed into the housing unit where it is most accepted. Some of the kennels inside the group housing cages were meant to be individual kennels, but due to increase in number of rescued dogs, the kennels also have become a type of group housing kennels.



Figure 51: Sneha's Care Dog Kennels (for Groups)

Source: Author

2. Built Spaces

The built spaces are made up of lightweight construction materials. The walls are made up of Hollow Cement Blocks (AAC Blocks), the roof is made up of CGI sheets supported on a steel truss. The cages and doors for the cages are made up of steel members. Cement punning is done to smoothen the surface for easy cleaning of the floors, maintaining hygiene in the cages and the clinic areas. Due to the lack of proper built spaces, the dogs are prone to whether effects like wind, rain, etc. They can go into the kennels but that cannot provide proper protection.



Figure 52: Sneha's Care Dog Shelter for Paralyzed Dogs

Source: Author

3. Landscape

There is designated space for landscape. The dogs are left in an open field. The field is located south of the facility, belonging to the facility. The dogs are left in the space for playing and for freshening up. However, the consideration for creating a dog park is not followed. It is just an open land with a shed built into it. The field consists of wild-grass, but there are very few trees and shrubs in the area. The park is for the use of the facility only, but not for the use of the community.



Figure 53: Sneha's Care Open Field

Source: Author

4. Acoustics

Due to the lack of proper built spaces, the acoustic control is poor in the area. The barking noise from the dogs is very loud, so much to the point that the neighbors are complaining about the noise. The outside noise, however doesn't disturb the interior possibly due to two reasons. One might be the distance, as the sitting areas for the people are at about 15m from the boundary. The other might be the location as the area is very less populated and virtually no traffic.

5. Lighting

As most of the area is semi-open, natural light enters most of the facility. The facility is well lit up during the daytime having to use artificial lights on some parts of the facility. At night, there are bright lamps on the circulation paths only. The cages and the kennels are lit-up with diffused light so that it doesn't cause strain on the dogs' eyes.

3.1.9. Miscellaneous

- **Diet**

The dogs here are fed two times a day, one on the morning and one on the night. During summer, the diet includes Rice, Vegetables and Chicken in the morning and Dog Food in the evening. During winter, their diet includes Rice, Vegetables and Chicken which they are fed two times a day.

- **Cleaning Schedule**

The floors are cleaned two times a day with chemical and water. They are also cleaned when the dogs litter the areas. They are cleaned with water and chemicals like lizol, etc.

- **Adoption Policies**

The facility will try not to adopt puppies as they are unvaccinated. The unvaccinated puppies are highly prone to disease communication from the vaccinated dogs from the shelter. The dogs having CTVT (Canine Transmissible Venerable Tumor) i.e. the dogs having cancer are also avoided as the chemotherapy will be harmful to the staffs and other dogs as well.

- **Bath**

The dogs are given a bath once every summer as the dogs should not be bathed regularly. This will be hazardous for the health of the dogs. They are not given a bath in the winter.

- **Benefit to the community**

The dog owners in the community are given free treatment. They are prescribed the medicine also. But, the clinic doesn't sell medicines to the community to gain profit from the charity medicines.

- **Water Supply and Drainage**

Water in the facility is supplied through the municipal water supply and is stored in a water tank of about 5.000 liters capacity. The drainage system is maintained and removed into the municipal water outlet.

- **Solid Waste Management**

The waste is collected and disposed to the municipal garbage collection coming twice every week.

- **Caretakers**

The caretakers are given space inside the facility. There are spaces for two caretakers. The access however, was not provided to the space.

3.1.10. Problems

Due to lack of construction considering the proper architectural guidelines, there are some problems that the facility faces. Some of them are mentioned below:

- **Entrance:** The entry to the facility is not so welcoming. The facility is guarded by a CGI fence such that there is no visual access to the facility. Even the signage of the facility cannot be seen. The facility will be completely unknown to a visitor coming for the first time.



Figure 54: Entrance to Sneha's Care

Source: Author

- **Response to the Weather:** Due to the semi-open construction of most of the facility, the facility and the dogs are highly prone to weather conditions. For instance, during a rainstorm, the inside of the cages wet.



Figure 55: Reception and Clinic Area

Source: Author

- **Acoustics:** As mentioned previously, there is problem of acoustic insulation in the facility. So, the facility is noisy with the constant barking of dogs. So much so that the neighbors are complaining about the noise. The issue reached to the municipality and

the facility is given a time of 2 years to be shifted to a new location. The facility plans to construct the new facility considering the proper architectural guidelines.

- **Flooring and Pavement:** Although the floor has been finished with cement punning for easy cleaning, the cement is not that smooth causing difficulty in cleaning. Also, the area that is exposed to weather causing moss to grow, creating a potentially dangerous environment with high chance of slipping.

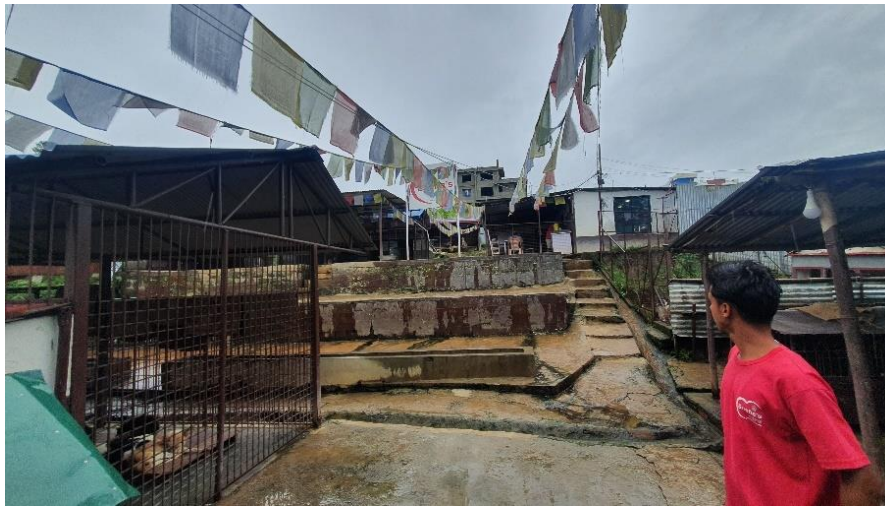


Figure 56: Entry Pathway

Source: Author

3.1.11. Analysis

Table 9: Analysis of Sneha's Care

S. No.	Aspect	Inference from Case Study
1.	Architectural Expression	Some considerations are made regarding the behaviors of the dogs, but few considerations are made about the architectural space requirements. The semi-open nature of the cages fulfils some of the requirements but, has its own set of problems.
2.	Landscape	A designated landscape is provided for the dogs to play around but the considerations for a dog park are not followed. However, plants that can harm the dogs are avoided
3.	Designing the Shelter:	
	<ul style="list-style-type: none"> • Type of Housing 	The facility adopts a group housing system. The kennels were originally meant for a single dog, but more dogs accommodate it due to over-population.

	<ul style="list-style-type: none"> • Entrance 	The entrance is not welcoming, with the entire facility being completely isolated with CGI sheets.
	<ul style="list-style-type: none"> • Spaces and its use 	The spaces designed are used as intended and space allocation is good.
	<ul style="list-style-type: none"> • Site Selection 	The site-selection was good at the time the facility was made. But, due to urbanization the area is being populated and is creating problems. Problem of a paved road, however, still exists.
	<ul style="list-style-type: none"> • Building Layout 	There is lack of proper built spaces. The space designation is good with easy access to the animals if needed.
	<ul style="list-style-type: none"> • Acoustics 	As there is lack of proper built spaces, noise from the dogs' barking is very loud and causes problem within the facility and for the neighborhood.
	<ul style="list-style-type: none"> • Lighting 	Diffused lighting is used for most of the cages as direct lighting will create uncomfortable environment for the dogs.

Source: Author

3.1.12. Inferences

- Provision of different activities for rehabilitation of stray animals.
- Large play areas for enhancing the health of the animals
- Kennels Separated into different categories as per the condition of dogs
- Temporary structure of concrete blocks
- Lack of well-equipped labs for disease analysis
- Lack of proper noise insulation methods

3.2. Kathmandu Animal Treatment Center

3.2.1. Overview

Location: Rudeyeshowr, Buddhanilkantha, Kathmandu

Area: 2,035 sq.m. (4 Ropani)

Establishment: 2004 A.D.

Founder: Ms. Jan Salter

No. of Staffs: 14

Intern Social Workers: 6

No. of Dogs: 86

Type of Housing: Individual and Group Housing



3.2.2. Introduction

The KAT Centre Nepal (Kathmandu Animal Treatment Centre) is a nonprofit organization in Nepal. Established in 2004, located in Buddhanilkantha, Kathmandu, the KAT Centre's goals are to create a healthy, sustainable street dog population, reduce animal cruelty, and eliminate rabies, around Kathmandu, Nepal. The facility handles cases according to both the surveys and call from the concerned community. The Kathmandu Animal Treatment Centre Nepal was first conceived after Jan Salter visited the organization Help in Suffering in Jaipur, India. Impressed with the way this and other animal welfare organizations have managed difficult street dog problems and eliminated rabies through Animal Birth Control (ABC) and widespread rabies vaccinations, Ms. Salter came back to Nepal convinced that Kathmandu can become a rabies-free, dog-friendly city. The KAT Centre was registered as a non-profit charitable animal welfare organization in 2003, and officially opened its doors on 9 May 2004. The organization's patron is Dr. Charlotte Uhlenbroek. The KAT Centre depends on donations from people and foundations throughout the world to support its programs. It receives almost no support from the government of Nepal.

DOGS		Cats	
ABC	10	Rescue	11
Rescue	45	Kitten	55
Puppy	13	Total	167
In House	18	Income R	4
Total	86	Income ABC	0
Adopt	2	Release	0
Income	7	Adopt	0
Release	30	Monkey	1

Figure 57: KAT Center Information Board

Source: Author

3.2.3. Reason for Selection

- One of the most systematic animal rescue centers in the valley.
- Conducts various types of research and surveys throughout the valley.

3.2.4. Site and Surroundings

The facility is located at a peaceful area away from the main road surrounded by very few residential buildings. The entry to the facility is guided by an 8' unpaved path. The site is north oriented. Most of the structures on the facility is constructed of Hollow Cement Blocks and steel post and CGI structure with trusses. There is lack of an open landscape for the dogs but there is a community forest on the east of site for dogs to explore on leash. Many dog cages and runs are present on the site for different types of dogs. The site is located on a contoured land. The upper part of the site consists of the administrative block, the entrance and areas for the community park. The lower part consists of the clinic and the shelters for the dogs and cats.



Figure 58: Access Road Leading to the Facility

Source: Author

3.2.5. Functional Module

The facility works on a basic module following certain procedures for adoption as well as the treatment of dogs. The facility operates on the following policies:

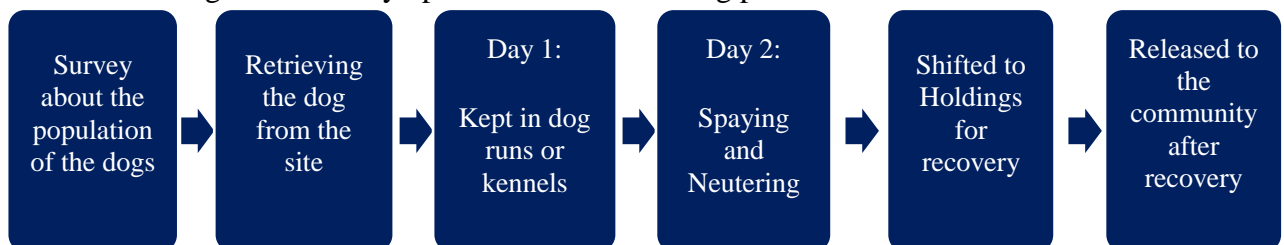


Figure 59: Kathmandu Animal Treatment Center Operating Policies

Source: Author

3.2.6. Procedure for Treatment and Care

The facility follows the following procedure for the adoption and providing shelter for the dogs and for the treatment for the dogs:

- A survey is done regarding the population of dogs and the problems they have in the community is also studied. The facility also accepts calls from different parts of the valley about the animal that needs rescue.
- After the completion of the survey, the dogs are retrieved from the site. They are brought to the site with the help from the community or on leashes and nets.
- The dogs are brought to the site for ABC (Animal Birth Control) and for animal rescue.
- The dogs are first taken to an isolation cage. If the dog is brought for ABC, the dog is kept for resting in the first day. On the second, the dog is taken to the surgery where it is spayed and neutered. If the dog is rescued, it is checked up and provided with the necessary treatment.
- The dog is then kept in the shelter until it is recovered.
- If the dog recovers, it is sent back to the community. But, if the dog is unable to be sent back, it is then taken in by the shelter where it can be adopted and find itself a home.

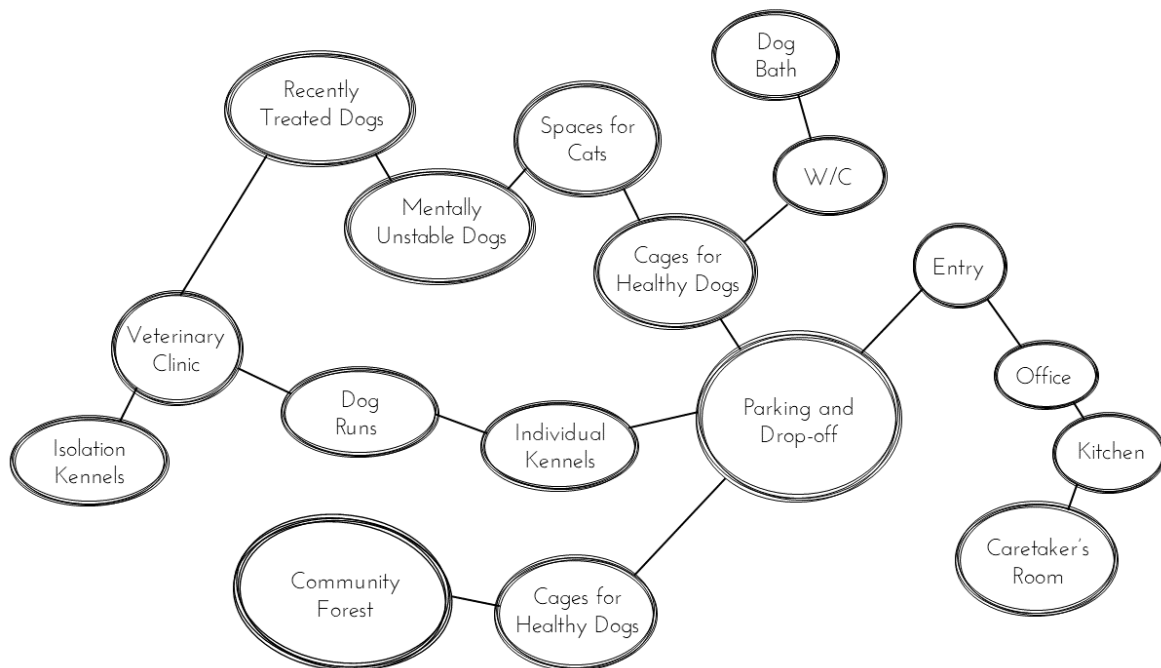


Figure 60: KAT Space Bubble Diagram

Source: Author

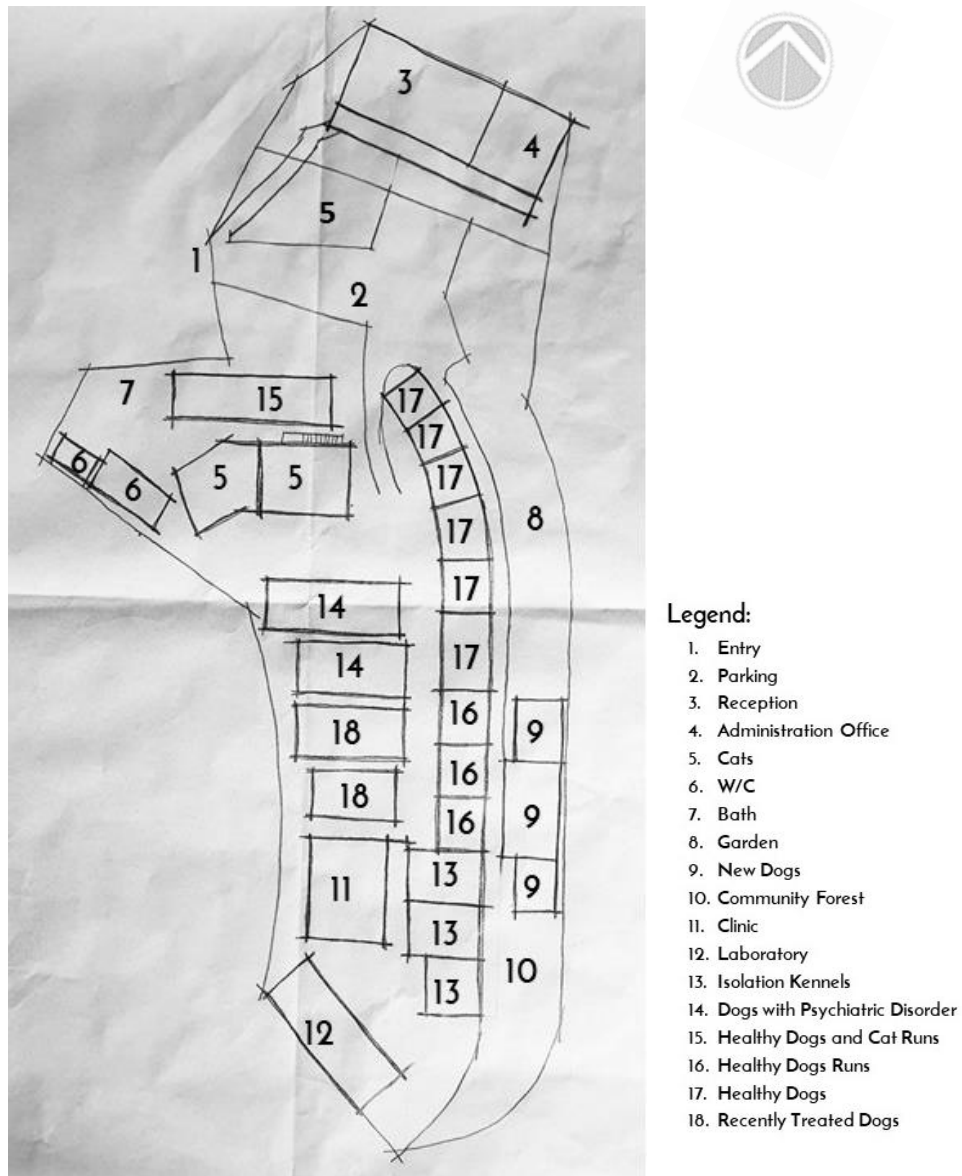


Figure 61: Kathmandu Animal Treatment Center Master Plan

Source: Author

3.2.7. Adoption Procedure

The adoption of dogs is a very delicate and a sensitive process. The selection of the correct family for the dogs can be crucial for the dogs and finding them a new family that treats them as a family member, not as a guard dog or as a hobby. For the proper selection of family, the facility selects the family based on the following procedures:

- **Visit Place**

The family that wants to adopt the dog must visit the facility and must interact with the dogs. The staffs personally check out how the family members interact with the dogs and treat them.

- **Interview**

The Family then must go through an interview with the facility Incharge. The family will be asked about their perspective about dogs and why they want to adopt the dog. The dog will not be handed over to the family if the dog will act as a guard dog or if it is to be tied to a leash for most part of the day.

- **Form and Legal Procedure**

The family then must fill up the form and complete the legal procedures to adopt the dogs. Adopting the dogs should have the same amount of considerations as adopting a child, to ensure the dogs' safety. The facility also allows the dogs to find a home in a foreign country if the dog find a foreigner as an owner and makes legal arrangement for the dog to travel.

- **Follow-Up**

After the dog is handed over to the family, the facility conducts the follow up procedure to verify whether the family is treating the dog as intended or not. The procedure continues for 2-3 months with surprise visits. The family is then finally given the responsibility of the dog if the facility is convinced the family can take good care of the dog and treat them as a family member.

3.2.8. Design Expression

The facility was built and expanded as per the requirements. The facility started on a land of 30 anna as temporary structure and developed as the number of animals grew and now, covers an area of 4 Ropani. There are some design considerations followed, but some considerations are made as per the behavior and requirements of the animals. The construction is done to sustain the dogs and the overall spaces created are moderate for the animals and their wellbeing. The following are the design expression of the facility:

1. Type of Housing

The facility follows the design concepts of both individual housing and group housing for the dogs. The dogs that are from the same community are kept in groups and the dogs with issues or new dogs are kept in kennels. There are separate kennels for different community as the dogs are territorial and don't welcome dogs from other communities. The new dogs are placed into kennels or separate runs. The dogs are not crammed into a small kennel at any case. The dogs are relocated to a different facility like SPCA or Sneha's Care in case of overpopulation.



Figure 62: Individual Kennels for Dogs

Source: Author



Figure 63: Dog Runs

Source: Author

2. Built Spaces

The built spaces are made up of lightweight construction materials. The walls are made up of Hollow Cement Blocks and some are made with CGI sheets for the kennels, the roof is made up of CGI sheets supported on a steel truss. The cages and doors for the cages are made up of steel members and chain-link meshes. Cement punning is done to smoothen the surface for easy cleaning of the floors, maintaining hygiene in the cages and the clinic areas. Due to the lack of proper built spaces, the dogs are prone to whether effects like wind, rain, etc. The effect however is minimized due to large cantilever projections.



Figure 64: Materials Used in the Facility

Source: Author

3. Landscape

There is a lack of a designated space for landscape. The dogs are taken into a nearby community forest for touring with a leash on them. They are taken to the forest by volunteers that enter the community. The forest is located east of the facility, taken care by the community. The dogs are toured in the forest for freshening up. However, there is a lack of a dog park or even an area where the dog can be free from leashes. Even the inside of the facility doesn't have an off-leash facility as the dogs might go outside due to lack of proper fencing.



Figure 65: Access to the Community Forest

Source: Author

4. Acoustics

Due to the lack of proper built spaces, the acoustic control is poor in the area. The barking noise from the dogs is loud, but due to lack of population, the complaints from the neighbors are less. The outside noise, however doesn't disturb the interior as the surrounding of the facility are mostly trees and uninhabited land.

5. Lighting

As most of the area is semi-open, natural light enters most of the facility. The facility is well lit up during the daytime having to use artificial lights on almost nowhere in the facility. At night, there are bright lamps on the circulation paths only. The cages and the kennels are lit-up with diffused light so that it doesn't cause strain on the dogs' eyes.

3.2.9. Miscellaneous

- **Diet**

The dogs here are fed two times a day, one on the morning and one on the night. The diet includes Rice and Chicken in the morning and Dog Food in the evening. The water is clean and is supplied through municipal supplies.

- **Cleaning Schedule**

The floors are cleaned two times a day with chemical and water. They are also cleaned when the dogs litter the areas. They are cleaned with water and chemicals like lizol, etc.

- **Adoption Policies**

The facility will try not to adopt that the community requests to take away if it creates problems like barking, or following bikes, etc. They also don't adopt dogs that are aggressive or if they are heavily abused. They also don't take in puppies for the same reason as that of Sneha's Care.

- **Bath**

The dogs are given a bath once every summer as the dogs should not be bathed regularly. This will be hazardous for the health of the dogs. They are not given a bath in the winter.

- **Cremation**

The cremation of the dogs that pass away is taken care by an organization called Pariwartaan.

- **Water Supply and Drainage**

Water in the facility is supplied through the municipal water supply from Sundarijal and the supply is constant not needing any storage tanks. However, about 3-1,000-liter tanks are present in the site. The drainage system is maintained and removed into the municipal water supply.

- **Caretakers**

The caretakers are given space inside the facility. There are spaces for two caretakers. The access however, was not provided to the space.

3.2.10. Problems

Due to lack of construction considering the proper architectural guidelines, there are some problems that the facility faces. Some of them are mentioned below:

- **Access:** The access to the facility is very underdeveloped. The location of the site ideal considering the noise factors and response factors, but the access to the site is very poor. The road is not paved with no clear direction to the site.



Figure 66: Access Road Leading to the Site

Source: Author

- **Acoustics:** As mentioned previously, there is problem of acoustic insulation in the facility. So, the facility is noisy with the barking of dogs. There is not much complaints from the neighbors, due to lack of much population in the area. But, eventually the population will increase in the area and the problem of acoustics will surely arrive in the site.
- **Response to the Weather:** Due to the semi-open construction of most of the facility, the facility and the dogs are prone to weather conditions. For instance, during a rainstorm, the inside of the cages wet. However, the condition is minimized due to the large cantilevers.



Figure 67: KAT Center Roofing System

Source: Author

- **Flooring:** Although the floor has been finished with cement punning for easy cleaning, the cement is not that smooth causing difficulty in cleaning. Also, the area that is exposed to weather causing moss to grow, creating a potentially dangerous environment with high chance of slipping. The flooring on the upper floors are made from wooden planks and linoleum flooring.



Figure 68: Cement Punning on the Cages and Circulation Spaces

Source: Author

- **Fencing:** There is lack of proper fencing around the facility. Due to this the dogs from the outside enter the facility with potential of transmitting ticks and other diseases. However, more problems arrive when the facility dogs escape the site and eat the community chickens and destroying the fields.



Figure 69: Temporary CGI Fencing in KAT

Source: Author

- **Distance:** After the dog is brought to the facility, the dogs are to be carried into the isolation kennels. However, to reach to the isolation kennels and the clinic, you must pass through other kennel spaces having potential chances of spreading the diseases to the rescued dogs as the vaccination takes 10-12 days to take the effect.

- **Proper Isolation Spaces:** The isolation spaces for the dogs are constructed and are managed, but the placement on the site is poor. The distance and the risks are as mentioned above. The shelter is planning to create an isolation room as shown below which is close to the entrance. This will be a safer option for the dogs in the facility.

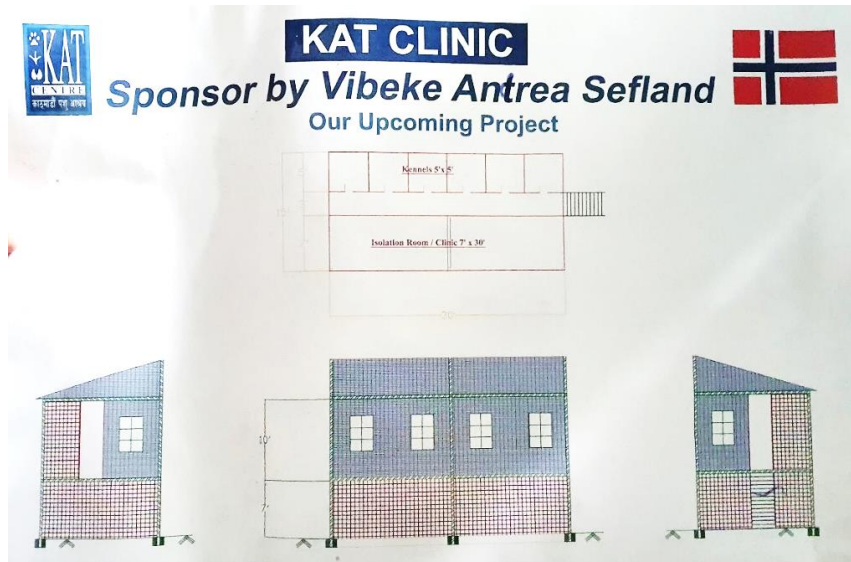


Figure 70: Isolation Cage Construction Plan for KAT Center

Source: KAT Center

3.2.11. Analysis

Table 10: Analysis of Kathmandu Animal Treatment Center

S. No.	Aspect	Inference from Case Study
1.	Architectural Expression	Some considerations are made regarding the behaviors of the dogs, and some considerations also are made about the architectural space requirements. The semi-open nature of the cages fulfils some of the requirements but, has its own set of problems.
2.	Landscape	No landscape dedicated for the dogs are made. The dogs are taken to a community forest on leashes for exploring.
3.	Designing of the Shelter:	
	<ul style="list-style-type: none"> • Type of Housing 	The facility adopts both individual and group housing system. The kennels which are meant for a single dog are kept that way, over-population is not followed.
	<ul style="list-style-type: none"> • Entrance 	The entrance is clear, lacking proper fencing. But, the access to the site is bad due to lack of proper roads.

	<ul style="list-style-type: none"> • Spaces and its use 	The spaces designed are used as intended and space allocation is good. The main problem lies in the placement of the isolation cage.
	<ul style="list-style-type: none"> • Site Selection 	The site-selection is good as less populated site created less complaints from the neighborhood. But, access to the site could be improved.
	<ul style="list-style-type: none"> • Building Layout 	There are few proper built spaces. The space designation is good with easy access to the animals if needed.
	<ul style="list-style-type: none"> • Acoustics 	As there is lack of proper built spaces for the canines, noise from the dogs' barking is very loud and sometimes causes problem within the facility.
	<ul style="list-style-type: none"> • Lighting 	Diffused lighting is used for most of the cages as direct lighting will create uncomfortable environment for the dogs.

Source: Author

3.2.12. Inferences

- Provision of different activities for rehabilitation of stray animals.
- Good array of group housing and individual housing for dogs depending on the condition of the dogs.
- Lack of play areas to enhance the health of the animals.
- Problems from neighbors increased due to lack of proper fencing and barriers.
- Kennels Separated into different categories as per the condition of dogs
- Development on a temporary type structure of concrete blocks
- Lack of proper noise insulation methods. Luckily, it causes less problems due to the site location.

3.3. Society for the Prevention of Cruelty to Animals Nepal

3.3.1. Overview

Location: Bishnumati Pul, Hattigauda, Kathmandu

Area: 1530 sq.m. (3 Ropani)

Establishment: 1993 A.D.

Founder: Ms. Jan Salter

No. of Staffs: 4

No. of Dogs: 70+

Type of Housing: Individual and Group Housing



3.3.2. Introduction

SPCAN (Society for the Prevention of Cruelty to Animals Nepal) was established in 1993 AD by a group of concerned, animal loving citizens to combat and to eradicate the various type of cruelties meted out to the innocent animals in Nepal. Becoming more active since 2000, the society with its limited resources but with great enthusiasm and tenacity has been conducting Animal Health Camps and Awareness Programs in the community and in schools in and around Kathmandu Valley. SPCAN conducts other regular awareness raising activities such as interviews with the media, school and institutional visits and the production of educational brochures and promotional posters. SPCAN was the only active organization in Nepal that fought animal cruelty and promoted animal welfare at all levels of society. The new venture received much positive local media attention and caused a significant increase in SPCAN membership.



Figure 71: SPCA Nepal View from Entrance

Source: Author

3.3.3. Reason for Selection

- The oldest animal rescue center of Nepal
- Provides services in various parts of the valley

3.3.4. Site and Surroundings

The facility is located at a moderately populated area with less traffic surrounded by some residential buildings. The entry to the facility is guided by a 12' unpaved path. The site is west oriented. Most of the structures on the facility is constructed of Hollow Cement Blocks and steel post and CGI structure. There is provision of an open landscape for the dogs, and the dogs are occasionally freed to wander around and the considerations for a dog park are not followed through. Many dog cages are present on the site for different types of dogs and open cage is present for the dogs that are taken in by the facility. The site is located on a flat land. The land is zoned on the basis of the dog's placement being the place for the new dogs, administration block and the place for the old dogs respectively starting in order from entry to the back of the site.



Figure 72: Access Road Leading to the Facility

Source: Author

3.3.5. Functional Module

The facility works on a basic module following certain procedures for adoption as well as the treatment of dogs. The facility operates on the following policies:

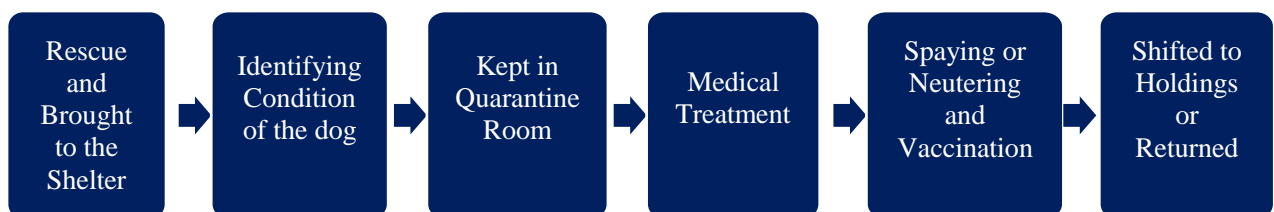


Figure 73: SPCA Nepal Operating Policies

Source: Author

3.3.6. Procedure for Treatment and Care

The facility follows the following procedure for the adoption and providing shelter for the dogs and for the treatment for the dogs:

- The facility receives calls from different parts of the valley about the animal that needs rescue.
- The personnel from the facility go to site based on the call received and tries to treat the animals in the site if the problem is not that severe.
- If the condition of the animal is severe or if the treatment will take a long time, the facility will bring the dog in a taxi or a bike as there is no private rescue vehicle for the organization. The person who called the facility or the member of the society must sign a consent form for the dogs to be taken into the facility to avoid any legal issues later in the road.
- The dog is then kept in a quarantine cage to avoid transmission of any diseases and are treated during that time. After the dog is healed, it is taken back to the community.
- If the dog must stay on the site, the dogs is then placed on the place for old dogs for about an hour for a week to check them familiarize with other dogs in the cage.
- The dog is then shifted to the cage and is looked after in the facility until it finds a home.

3.3.7. Adoption Procedure

The adoption of dogs is a very delicate and a sensitive process. They try to avoid giving the dogs inside the Kathmandu Valley. The selection of the correct family for the dogs can be crucial for the dogs and finding them a new family that treats them as a family member, not as a guard dog or as a hobby. The facility provides merits to the family like giving free vaccinations and treatment to the dogs for about a year. For the proper selection of family, the facility selects the family based on the following procedures:

- **Visit Place**

The family that wants to adopt the dog must visit the facility and must interact with the dogs. The staffs personally check out how the family members interact with the dogs and treat them.

- **Form and Legal Procedure**

The family then must fill up the form and complete the legal procedures to adopt the dogs. Adopting the dogs should have the same amount of considerations as adopting a child, to ensure the dogs' safety. The facility also allows the dogs to find a home in a foreign country if the dog find a foreigner as an owner and makes legal arrangement for the dog to travel.

- **Follow-Up**

After the dog is handed over to the family, the facility conducts the follow up procedure to verify whether the family is treating the dog as intended or not. The procedure continues for 2-3 months with surprise visits. The family is then finally given the responsibility of the dog if the facility is convinced the family can take good care of the dog and treat them as a family member.

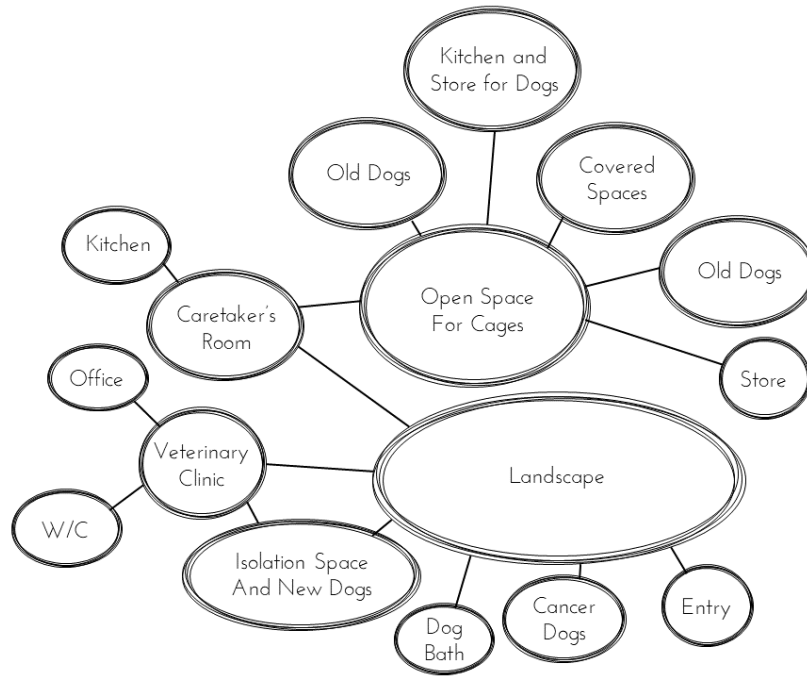


Figure 74: SPCA Nepal Space Bubble Diagram

Source: Author

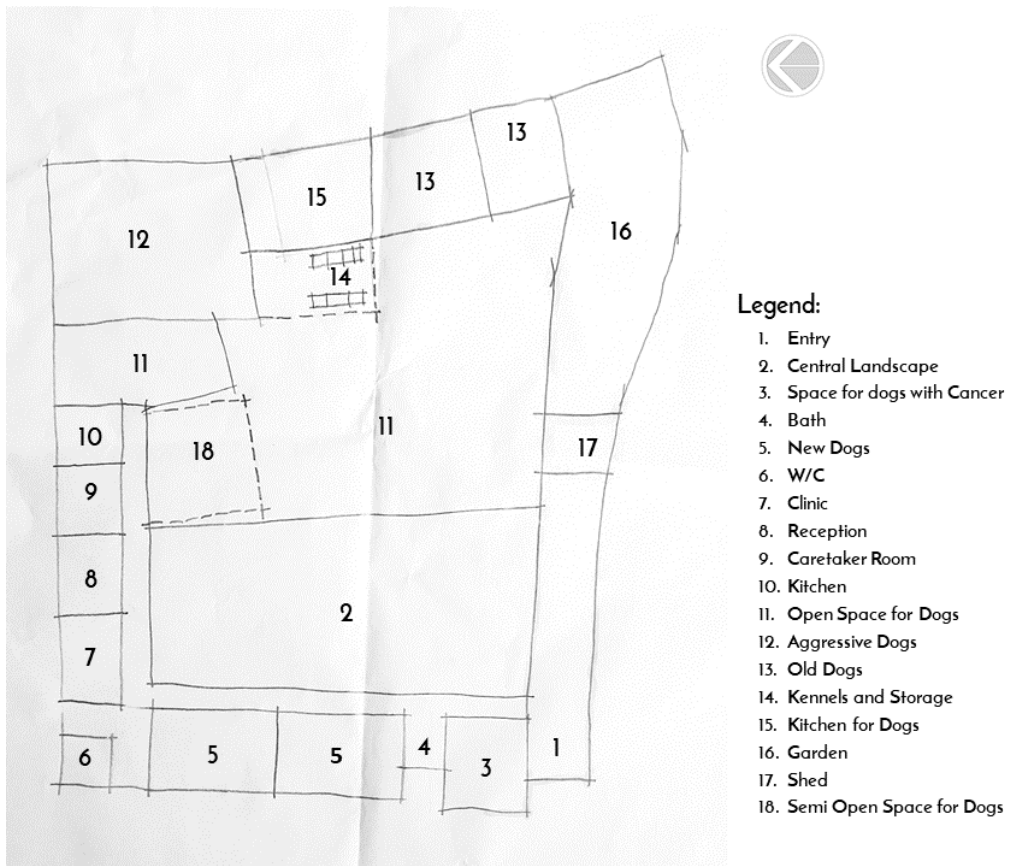


Figure 75: SPCA Nepal Master Plan

Source: Author

3.3.8. Design Expression

The facility was built and expanded as per the requirements. The facility is built on a land of 3 Ropani as temporary structure and developed into a permanent type structure as the funding as obtained throughout time. There are some design considerations followed, but few considerations are made as per the behavior and requirements of the animals. The construction is done to sustain the dogs and the overall spaces created are moderate for the animals and their wellbeing. The following are the design expression of the facility:

1. Type of Housing

The facility follows the design concepts of group housing for the dogs. However, individual kennels are used for some cases. The dogs that arrive newly are kept in a kennel that acts as a quarantine for them. There are separate kennels for different types of communicable diseases. If the dog cannot be released back into the community, the dogs are shifted to the section with old dogs where they are familiarized for few days and then are transported there.

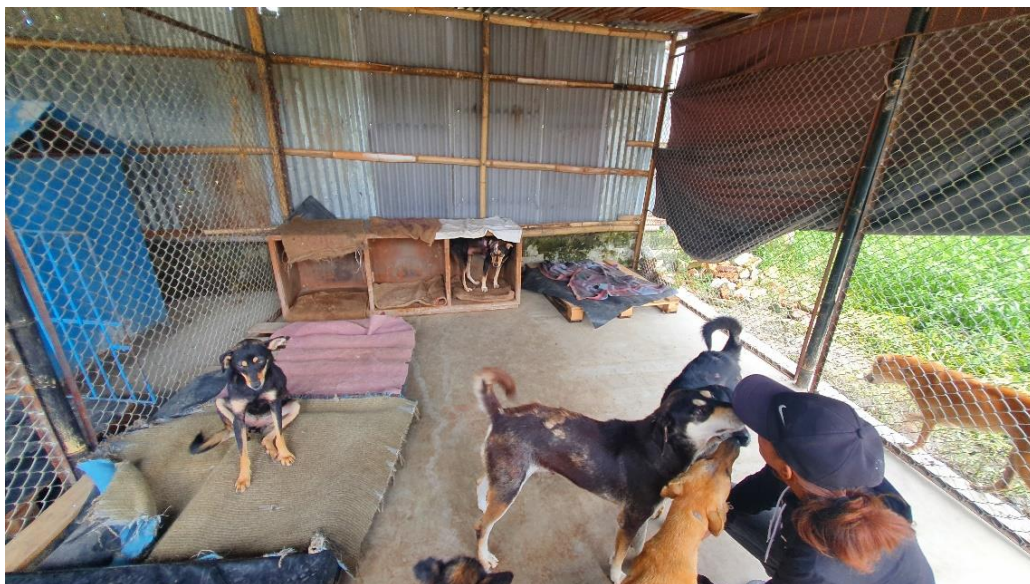


Figure 76: SPCA Nepal Group Housing System

Source: Author

2. Built Spaces

The built spaces are made up of lightweight construction materials. The walls are made up of Hollow Cement Blocks, the roof is made up of CGI sheets supported on a steel truss. There are some semi open spaces for the dogs as well with only a roof made from fiber-glass. The cages and doors for the cages are made up of steel members and chain-link meshes. Cement punning is done to smoothen the surface for easy cleaning of the floors, however, the lack of proper maintenance created cracks and uneven surfaces. It is difficult to clean and maintain hygiene in the cages and the clinic areas. Having moderate built spaces, the dogs are less-prone to whether effects like wind, rain, etc.



Figure 77: Kennels for New Dogs

Source: Author



Figure 78: Semi-Open Space for Dogs

Source: Author

3. Acoustics

Due to the lack of proper built spaces, the acoustic control is poor in the area. The barking noise from the dogs is loud, but the complaints from the neighbors are less as the SPCAN was built before the community and are tolerant to the noise. The outside noise, however doesn't disturb the interior as the surrounding of the facility.

4. Landscape

There is a designated central space for landscape. The dogs are left in the open field. The dogs are left in the space for playing and for freshening up. However, the consideration for creating a dog park is not followed. It is just an open land. The field consists of wild-grass, with no trees and shrubs in the area.



Figure 79: Central Landscape for Dogs

Source: Author

5. Lighting

As most of the area is semi-open, natural light enters most of the facility. The facility is well lit up during the daytime having to use artificial lights on almost nowhere in the facility. At night, there are bright lamps on the circulation paths only. The cages and the kennels are lit-up with diffused LED lights so that it doesn't cause strain on the dogs' eyes.

3.3.9. Miscellaneous

- **Diet**

The dogs here are fed two times a day, one on the morning and one on the night. The diet includes Rice and Chicken or, Rice and Buffalo meat. For the sick dogs, they are fed with a mixture of rice, liver and egg. Snacks are occasionally provided by the visitors.

- **Cleaning Schedule**

The floors are cleaned two times a day. They are also cleaned when the dogs litter the areas. They are cleaned with water and chemicals like lizol, etc.

- **Adoption Policies**

The facility will not adopt or aid in rescue and dogs if the doctor is not available. The doctor is a part-time veterinary doctor and the facility will have to operate on that. The facility will not adopt healthy street dogs also.

- **Bath**

The dogs are given a bath every 4-6 months during summer as the dogs should not be bathed regularly. This will be hazardous for the health of the dogs. The dogs are not given a bath during the winter.

- **Cremation**

The cremation of the dogs that pass away is taken care by the Kathmandu Municipality. The dogs are not permitted to be buried on the site by the land-lord.

- **Water Supply and Drainage**

Water in the facility is supplied through the municipal water supply. A 1,000-liter tank is present in the site. The drainage system is maintained and removed into the municipal water supply.

- **Caretakers**

The caretakers are given space inside the facility. There are spaces for two caretakers. The access however, was not provided to the space.

3.3.10. Problems

Due to lack of construction considering the proper architectural guidelines, there are some problems that the facility faces. Some of them are mentioned below:

- **Access:** The access to the facility is underdeveloped. The main road is developed but the road leading to the site is not. The site is located about 100 m away from the main road. The location of the site good considering the noise factors and response factors, but the access to the site is very poor. The road is not paved with no clear direction to the site and no signage is present in the site.
- **Acoustics:** As mentioned previously, there is problem of acoustic insulation in the facility. The facility is noisy with the barking of dogs. There is not much complaints from the neighbors, possibly as the organization was there before the houses and is less populated. But, eventually the population will increase in the area and the problem of acoustics will surely arrive in the site.
- **Flooring:** Although the floor has been finished with cement punning for easy cleaning, the cement is cracked and chipped causing difficulty in cleaning. The flooring on the administration floors are covered with linoleum flooring.



Figure 80: Flooring in SPCA Nepal

Source: Author

- **Maintenance:** Due to the lack of maintenance, the odor control in the facility is very poor. The flooring has started to crack and crumble. The cleaning and maintenance have not been maintained properly.

3.3.11. Analysis

Table 11: Analysis of SPCA Nepal

S. No.	Aspect	Inference from Case Study
1.	Architectural Expression	Very little considerations are made regarding the behaviors of the dogs, and about the architectural space requirements. The semi-open nature of the cages fulfils some of the requirements but, has its own set of problems.
2.	Landscape	A central landscape is provided for the dogs to play around but the considerations for a dog park are not followed. The dogs are released on the field occasionally.
3.	Designing the Shelter:	
	<ul style="list-style-type: none"> Type of Housing 	The facility adopts both group housing system with individual kennels for some cases. The group housing system contains cages for dogs even if the community are different.
	<ul style="list-style-type: none"> Entrance 	The entrance is not clear, contains proper fencing. The facility however, lacks and form of signage and the access to the site is bad due to lack of proper roads.
	<ul style="list-style-type: none"> Spaces and its use 	The spaces designed are used as intended and space allocation is good. The main problem lies in the placement of the isolation cage.
	<ul style="list-style-type: none"> Site Selection 	The site-selection was good as less populated site was chosen at the time it was constructed. Now, the area has been populated. But, still it creates less complaints from the neighborhood. But, access to the site could be improved.
	<ul style="list-style-type: none"> Building Layout 	There are moderate built spaces for the dogs. The space designation is good with easy access to the animals if needed.
	<ul style="list-style-type: none"> Acoustics 	As there is lack of proper built spaces for the canines with proper acoustic considerations, noise from the dogs' barking is loud.
	<ul style="list-style-type: none"> Lighting 	Diffused lighting is used for most of the cages as direct lighting will create uncomfortable environment for the dogs.

Source: Author

3.3.12. Inferences

- Provision of semi-open caged-space for the dogs which is good compared to the closed spaces seen in other shelters.
- Lack of play areas to enhance the health of the animals.
- Kennels Separated into different categories as per the condition of dogs
- Development on a temporary type structure of concrete blocks
- Lack of well-equipped labs for disease analysis, only a clinic present on the site
- Lack of proper noise insulation methods causes less problems due to the site location

3.4. Comparative Analysis of National Case Studies

Table 12: Comparative Analysis of Animal Care Shelters in Nepal

S. No.	Parameters	Sneha's Care	K.A.T. Center	S.P.C.A. Nepal
1.	Architectural Expression	<ul style="list-style-type: none"> • Some considerations regarding dogs' behaviors. • Few considerations about architectural space requirements. • Semi-open Cages. 	<ul style="list-style-type: none"> • Some considerations regarding dogs' behaviors. • Some considerations also made about architectural space requirements. • Semi-open Cages. 	<ul style="list-style-type: none"> • Very little considerations regarding dogs' behaviors • Very Little considerations about architectural space requirements. • Semi-open Cages.
2.	Landscape	<ul style="list-style-type: none"> • Landscape provided for the dogs to play around • Doesn't follow considerations for dog park. 	<ul style="list-style-type: none"> • No landscape for the dogs is made. • Dogs are taken to community forest on leashes. 	<ul style="list-style-type: none"> • Central landscape provided for the dogs to play around. • Doesn't follow considerations for dog park.
3.	Design of the Shelter:			
	○ Type of Housing	<ul style="list-style-type: none"> • Group Housing. • Originally individual kennels but group due to over-population 	<ul style="list-style-type: none"> • Both individual and group housing. • Over-population not allowed. 	<ul style="list-style-type: none"> • Group Housing. • Individual kennels for some special cases.
	○ Entrance	<ul style="list-style-type: none"> • Entrance is not welcoming. • Entire facility completely isolated with CGI sheets. 	<ul style="list-style-type: none"> • The entrance lacking proper fencing. 	<ul style="list-style-type: none"> • The entrance not clear • Lacks any form of signage
	○ Spaces and its use	<ul style="list-style-type: none"> • Spaces designed are used as intended. • Good space allocation. 	<ul style="list-style-type: none"> • Spaces designed are used as intended. • Main problem lies in the placement of the isolation cage. 	<ul style="list-style-type: none"> • Spaces designed are used as intended. • Good space allocation.
	○ Site Selection	<ul style="list-style-type: none"> • Good at the time the facility was made. 	<ul style="list-style-type: none"> • Good site selection. • Access to the site can be improved. 	<ul style="list-style-type: none"> • Good at the time the facility was made.

		<ul style="list-style-type: none"> • Increase in population due to urbanization. • Problem of a proper road. 		<ul style="list-style-type: none"> • Increase in population due to urbanization. • Access to the site can be improved.
	○ Building Layout	<ul style="list-style-type: none"> • Lack of proper built spaces. • Good space designation with easy access to the kennels. 	<ul style="list-style-type: none"> • Few proper built spaces. • Good space designation with easy access to the kennels. 	<ul style="list-style-type: none"> • Moderate built spaces. • Good space designation with easy access to the kennels.
	○ Acoustics	<ul style="list-style-type: none"> • Lack of proper built spaces, hence, sound insulation 	<ul style="list-style-type: none"> • Lack of proper built spaces, hence, sound insulation 	<ul style="list-style-type: none"> • Lack of proper built spaces, hence, sound insulation
	○ Lighting	<ul style="list-style-type: none"> • Diffused white lighting. 	<ul style="list-style-type: none"> • Diffused white lighting. 	<ul style="list-style-type: none"> • Diffused white lighting.

Source: Author

3.5. Vet for Your Pet

3.5.1. Overview

Location: Bansidhar Marga, Chandol, Kathmandu

Area: 850 sq. ft. (approx.)

Establishment: 2019 A.D.

No. of Staffs: 6

Capacity of Dogs/ Cats: 14



3.5.2. Introduction

The vet for your pet is a health care clinic for dogs and cats that aims to create a new standard in the sector of veterinary clinics and veterinary care. Vet for Your Pet are committed to providing your pets with compassionate and knowledgeable care. The clinic has opened two branches, one in Suryabinayak, Bhaktapur, and the other in Chandol, Kathmandu. The clinic at Chandol is set-up on a leased residential building taken for a tenure of 10 years. The clinic plans to create a franchise with a certain standard. The clinic operates on the basis that the animals get the top priority and they are seen and cared through their lifetime. The animals are recorded for future care and to keep a data for further procedures and treatment plans.



Figure 81: Reception and Entry

Source: Author

3.5.3. Reason for Selection

- The clinic is recently established following the international standards.
- The spaces and the flow are arranged such that the functions of those spaces do not create disturbance for the other.
- Modern equipments and facilities are provided in the clinic.

3.5.4. Functional Module

The clinic works on a basic module following certain procedures for the treatment of dogs. The clinic operates on the following policies:

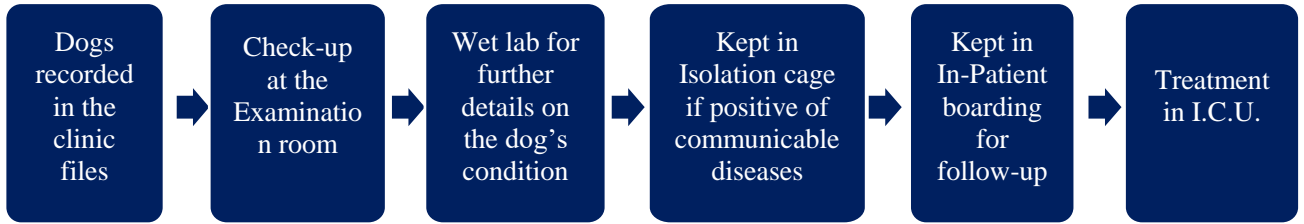


Figure 82: Vet for Your Pet Operating Policies

Source: Author

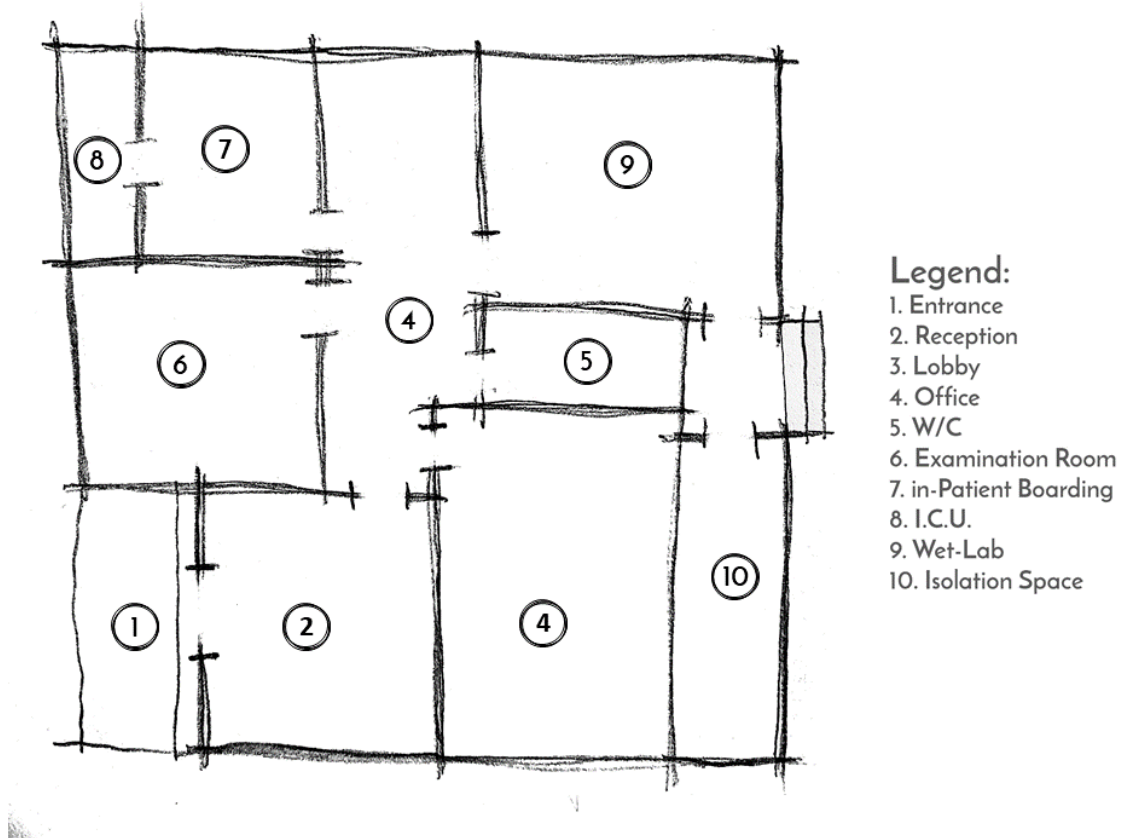


Figure 83: Vet for your Pet Plan

Source: Author

3.5.5. Design Expression

The facility was built on a leased residential building. With some constraints on the international standards, adaptive reuse of the residential was done on the facility. The facility still built thinking out the best placements of spaces. The clinic aims towards creating a franchise following certain design standards and considerations for the dogs and cats for their wellbeing.

1. Clinic Flow

The clinic operates on the flow that a lobby should connect all the spaces in the clinic without obstructing each other. There are some compromises made as the building was originally a residence, but the clinic still facilitates a proper flow for the patients. The entrance is led to the reception and the reception is connected through all the spaces with a central lobby.

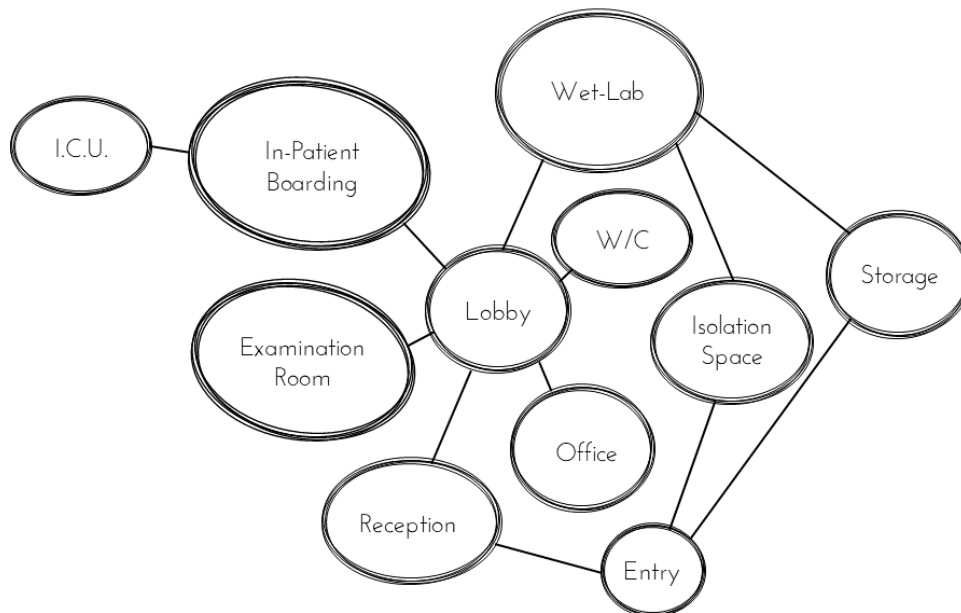


Figure 84: Vet for Your Pet Space Bubble Diagram

Source: Author

2. Isolation Space

The isolation spaces are kept at the back of the building. The isolation space can be accessed from the wet-lab from the inside and from the entrance outside the building. This was not planned, however, the placement worked in favor of the clinic as the isolation space can be accessed without going inside the clinic and can prevent the potential transmission of communicable diseases to other dogs.



Figure 85: Isolation Space

Source: Author

3. Double Compartment Kennels

Double compartment kennels are used for placing the dogs that are kept on surveillance and recovery. The cages are specially designed to allow for conserving space and a flexible cage. The size of the kennels can be doubled by removing the partition plate in the compartment combining two compartments. This increases the flexibility of space especially in a limited area.



Figure 86: Double Compartment Kennels

Source: Author

4. Construction Materials

The entire flooring of the facility is finished with tiles for easy cleaning and such that proper hygiene can be maintained within the clinic premises. The partition walls that was not already on the residential building is done using aluminum partitions. The walls are finished with plaster and paints.



Figure 87: Wet-Lab

Source: Author



Figure 88: Examination Room

Source: Author

3.5.6. Space-Area Analysis

Table 13: Space-Area Analysis of Vet for Your Pet

S. No.	Space	Area (sq. ft.)	Area (%)
1.	Circulation	132.44	16.09
2.	Reception	126.22	15.31
3.	Office	112.3	13.62
4.	Examination Room	144.72	17.56
5.	In-Patient Boarding	95.75	11.62
6.	I.C.U.	36.02	4.37
7.	Wet-Lab	120.44	14.61
8.	Isolation Space	56.38	6.84
	Total	824.24	100

Source: Author

3.5.7. Inferences

- Proper space flow and area allotments for the dogs.
- Standards for the clinic and flow are implemented using the international design standards.
- Cleanliness and Hygiene followed throughout the clinic.

3.6. PAWS- Play and Stay

3.6.1. Overview

Location: Ghatale, Suryabinayak, Bhaktapur

Area: 2 Ropani

Establishment: 201 A.D.

No. of Staffs: 3

Capacity of Dogs: 20



3.6.2. Introduction

Nepal's first and only state-of-the-art Dog Hotel and Training facility in Suryabinayak (approx. 18 min drive from Koteshwor). The facility provides the highest quality day care, boarding and grooming services for dogs. PAWS- Play and Stay is a new venture of Vet for Your Pet where the wellbeing of a pet is always a priority. With a compound close to the downtown area. PAWS offers a hotel and center for urban dogs comprised of lodging, grooming, training school and ground that is unique to Kathmandu. (Raymajhi, 2018)



Figure 89: PAWS- Play and Stay

Source: Author

3.6.3. Reason for Selection

- One of the few dog parks and boarding hotels in Nepal.
- Holds a certain standard regarding the care and boarding of dogs.

3.6.4. Functional Module

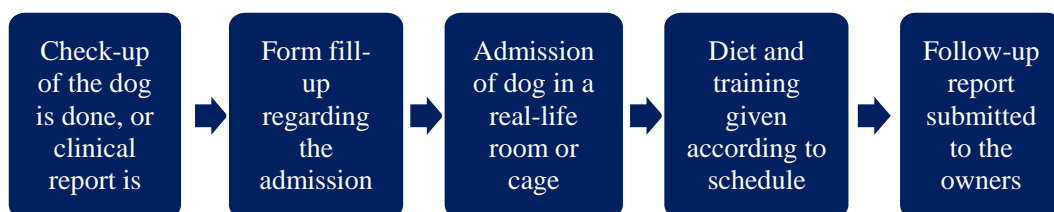


Figure 90: Functional Module of PAWS- Play and Stay

Source: Author

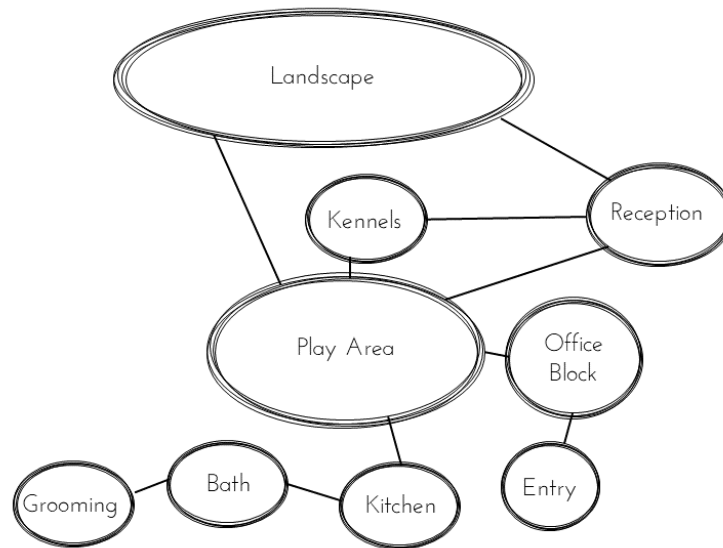


Figure 91: PAWS- Play and Stay Space Bubble Diagram

Source: Author

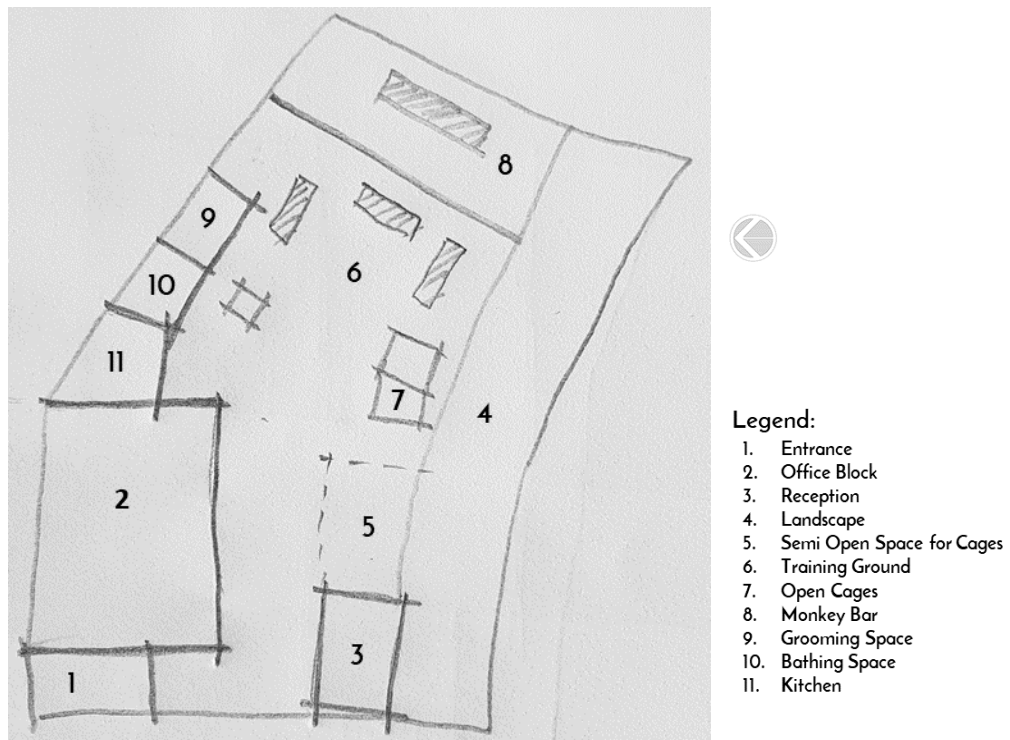


Figure 92: PAWS- Play and Stay Master Plan

Source: Author

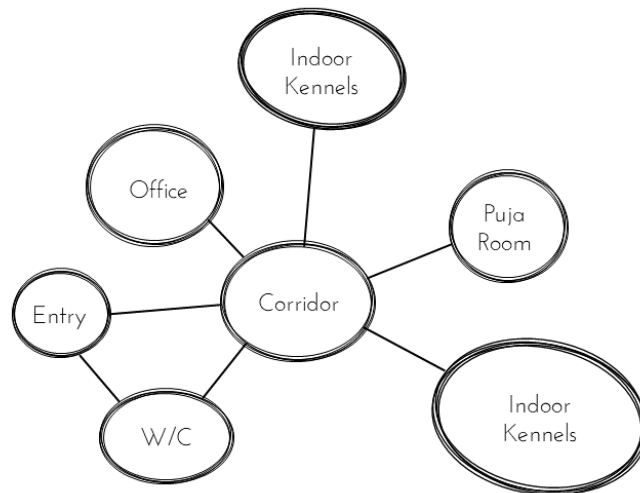


Figure 94: PAWS- Play and Stay Indoor Space Bubble Diagram

Source: Author

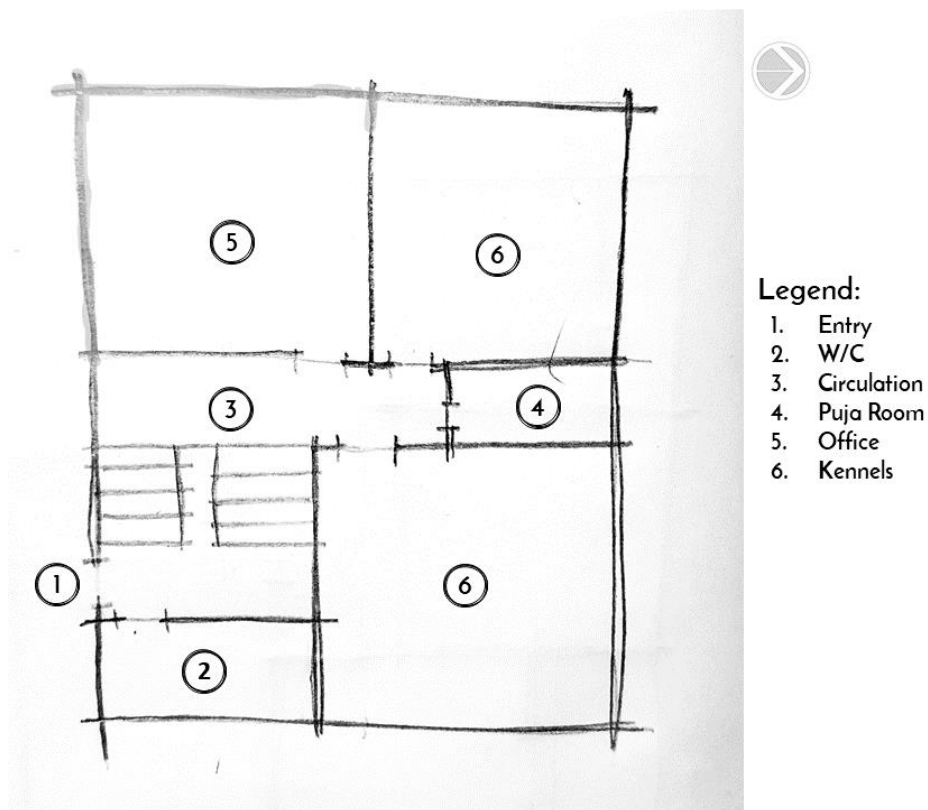


Figure 93: PAWS- Play and Stay Indoor Plan

Source: Author

3.6.5. Design Expression

1. Space Layouts

The space arrangement of the space is good. The entry contains double gate system so that the dogs will not run out whenever the guests arrive. The reception is located on the outside close to the entry. The rest of the office is located on the residential building the facility has taken on lease. The facility has one year left on its lease period. The facility is planning to move its facility into Kathmandu later in the road. The inside contains dog kennels, room for the veterinary doctor and an office for the owner. A puja room and storage space are also present inside the building.

2. Real life Rooms

Real life rooms are used for the inside keeping of the dogs. Cages are used when the dogs are kept outside. The facility also accepts the cages that the dogs are kept in their homes. They are kept in the rooms equipped with air conditioners. The dimension of the rooms is 48”x43” for smaller dogs and 4’x5’ for larger dogs. The height of the rooms is 5’ in height. Tile finish is done till 3’ tall to avoid the dogs destroying the walls. The flooring is finished with concrete.



Figure 95: Real Life Rooms

Source: Kathmandu Post

3. Landscape

There is an open contoured ground present in the site. The level difference on the contour is about 15’ from the base to the top. The contour mostly contains wild grass with few trees. The dogs are left to play in the contour for about an hour with the supervision of the staffs. They are restricted to play during the summer to avoid getting mud in the rain. The dogs are left to play in the landscape only if there is supervision by the staffs to avoid accidents.



Figure 96: Landscape at PAWS- Play and Stay

Source: Author

4. Training Ground

The facility also provides training services for the dogs. The facility provides a training ground that contains various equipments for playing as well as for training. It contains equipments like see-saw, a-frame, dog walk, etc. the dogs can play on the equipments. They are a total of five equipments present on the site for the dogs to play and train.



Figure 97: PAWS Training Ground

Source: Author

5. Construction Material

The facility is built as a residential building as the building itself is a residential building. The kennels however, is modified to be sound proof adding rock wool insulation and wooden partitions. The ceiling also contains a drop ceiling with acoustic panels. The kennels contains linoleum floors with tiles fitted up to 3' height and the partition is made from wood of 5' height. The doors for the kennels are made up of acrylic fitted on an aluminum frame.

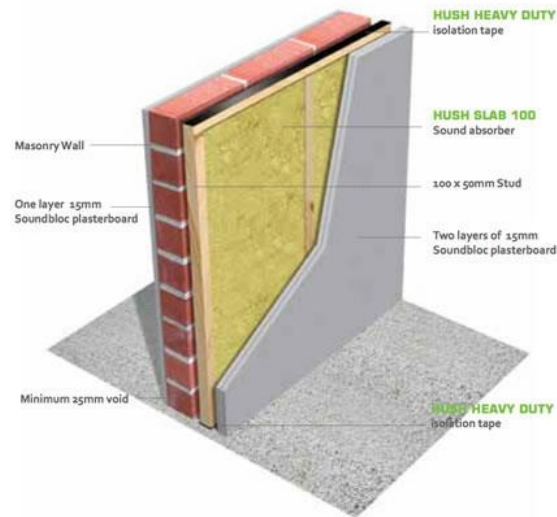


Figure 98: Sound Proofing Brick Walls

Source: <https://www.hushacoustics.co.uk/systems/hd1055-masonry-wall-stud-lining/>

3.6.6. Miscellaneous

- **Diet:** The dogs here are fed two times a day, one on the morning and one on the night. The diet includes the ingredients and instructions that are provided by the client. The feeding time for the dogs is also dependent on the client.
- **Cleaning Schedule:** The floors are cleaned two times a day. They are also cleaned when the dogs litter the areas. They are cleaned with water and chemicals like lizol, etc.
- **Bath:** The dogs are given a bath as the client provides. The grooming and hair cutting services are also provided by the facility from the consent of the client of course.
- **Water Supply and Drainage:** Water in the facility is supplied through the Pandu Bazaar water supply. A 1,000-liter tank is present in the site. The drainage system is maintained and removed into the municipal water supply.
- **Solid Waste Management:** The solid waste is taken care by the municipality. The city municipality arrives to collect the waste twice a week.
- **Caretakers:** The caretakers are given space inside the facility. There are spaces for a caretaker. The access however, was not provided to the space.



Figure 99: Grooming Space for Dogs

Source: The Kathmandu Post



Figure 100: Bathing Space for Dogs

Source: Author

3.6.7. Space-Area Analysis

S. No.	Space	Area (sq. ft.)	Area (%)
1.	Entry Foyer	132.44	16.09
2.	Reception	126.22	15.31
3.	Office	112.3	13.62
4.	Landscape	144.72	17.56
5.	Training Ground	95.75	11.62
6.	Bathing	36.02	4.37
7.	Grooming	120.44	14.61
8.	Kitchen	56.38	6.84
	Total	824.24	100

Source: Author

3.6.8. Inferences

- Proper spaces for the dogs to play with proper equipments.
- Sound proof walls for the kennel areas.
- Cages provided for both indoor and outdoor stay for the dogs.
- AC provided for the dogs to create a comfortable environment for them.

International Case Study

3.7. Palm Springs Animal Care Facility

3.7.1. Overview

Location: Demuth Park, Palm Springs, USA

Architects: Swatt/ Mier Architects

Area: 21,000 sq.m.

Establishment: October 2011 A.D.

Capacity: 100 Dogs

: 152 Cats



3.7.2. Introduction

The Palm Springs Animal Care Facility represents a unique public/private partnership between the City and Friends of the Shelter. Located on a 3-acre site across from the City's Demuth Park, the exterior design reflects Palm Springs' unique mid-century architectural heritage. Specific program components include a public oriented, Animal Community Center ambience featuring a central indoor/outdoor kennel design with public adoption access within an inviting garden courtyard equipped with misters and fabric shade structures. (ArchDaily, 2012)



Figure 101: Palm Springs Animal Care Facility

Source: ArchDaily, 2012

3.7.3. Reason for Selection

- A care facility with proper flow and accesses for different groups of people.
- Sustainable and consideration for future expansion.

3.7.4. Concept

This state-of-the-art Companion Animal Facility integrates traditional mid-century desert design motifs with modern, state-of-the-art Animal Care habitats and support systems. The project plan is a mirror of the desired operational flow of people and animals into and out of the facility organized around a central Canine Adoption Garden shaded by fabric overhangs and cooled by misters. The exterior design features a sweeping roof overhang oriented towards the San Jacinto Mountain range which both announces and shades three main public entrances - the Main Public Adoption Lobby, the Intake Lobby and the Education Center - each of which overlooks the City's actively used Demuth Park.

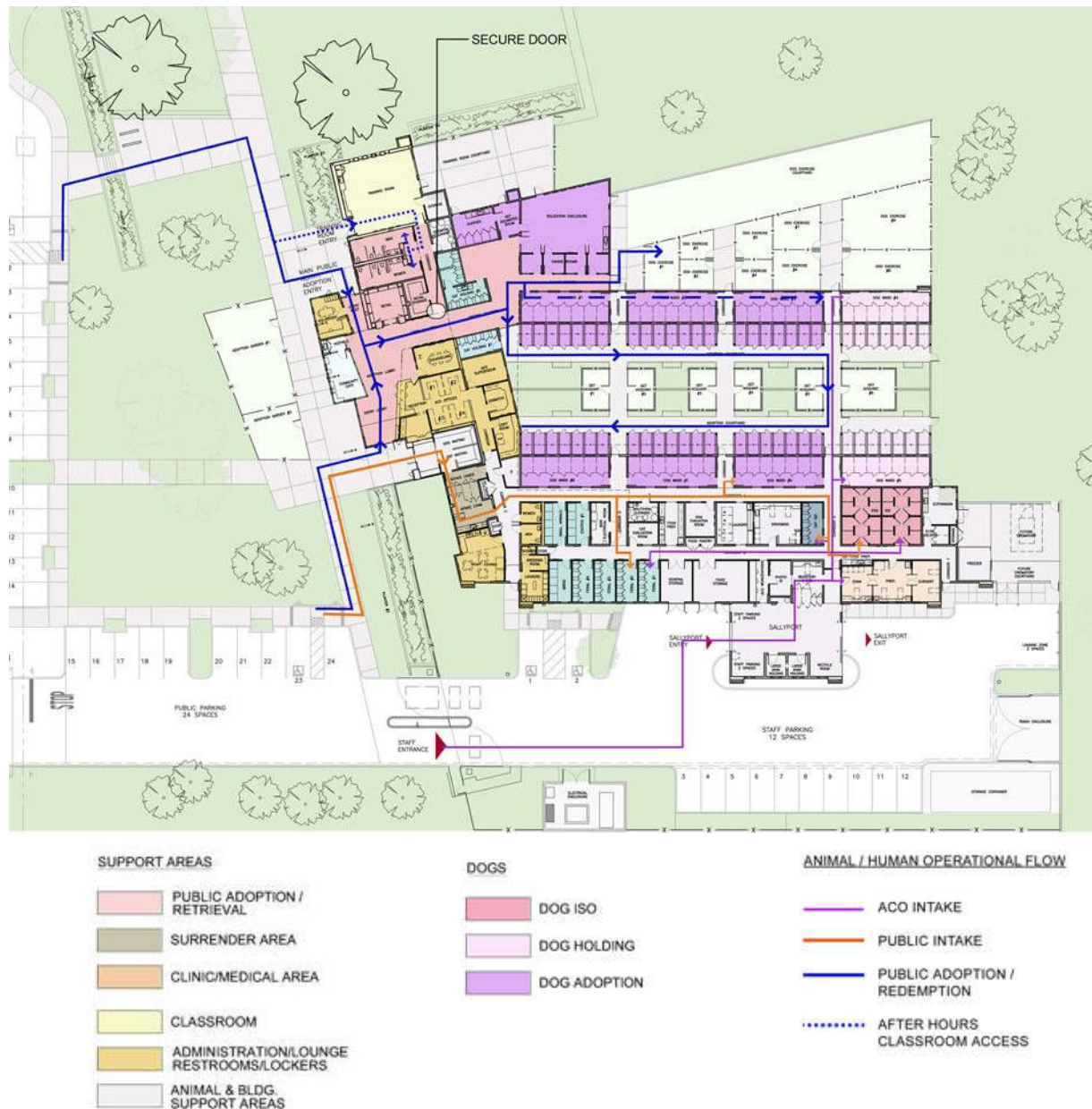


Figure 102: Palm Springs Floor Plan

Source: ArchDaily, 2012

These entrances serve the following needs;

- The Main Adoption/Business center; is where adoptions, licensing and related business activities occur.
- Public Intake is located next to the Adoption Entrance for the admittance of stray and surrendered animals to reduce the risk of disease transfer. The reception desks of these two entrances are backed up internally so that minimal staff can service either lobby.
- The after-hours Education Center/Classroom entrance is a community oriented multi-purpose room. The design places restrooms between the classroom and Adoption Center, which allows the rest of the facility to be secured after hours while community programs and/or humane education classes are in use.

3.7.5. Functional Module



Figure 103: Functional Module of Palm Springs Animal Care Center

Source: ArchDaily, 2012

3.7.6. Design Expression

- **Construction Materials**
Steel post and beam/metal stud shear wall system with cement plaster exterior walls featuring a vertical “raked” finish. Interior public areas include stained concrete and painted drywall with exposed ceiling insulation. Animal areas feature materials selected for their long-term durability due to the facility’s extensive cleaning (animal areas twice daily) and the abuse from dogs who like to chew. These materials include epoxy resin floors and walls, non-absorptive acoustical ceilings, and extensive stainless-steel casework and other protective devices.
- **Building Systems**
100% outside air on roof top units with heat recovery wheels for animal and medical areas. The chemical cleaning system features a unique central pump system wherein recycled water is mixed in a central cleaning room and then pumped through 1” stainless steel tubing to Remote Control Units (RCU’s). Portable hoses with quick coupler connections are then attached and used by staff.

- **Expansion**

The plan has been arranged to allow for future expansion of kennels and support areas to the east. The structure and electrical system have been designed to support future photovoltaics.

- **Water Supply and Drainage**

All cleaning water and irrigation is provided by “recycled water” from the adjacent sewage treatment facility. The plumbing system features a trap less drain arrangement designed to eliminate standing water in drains (and hence, odor) which is activated by power flush controls. The building also features a piped oxygen gas system in its medical area.

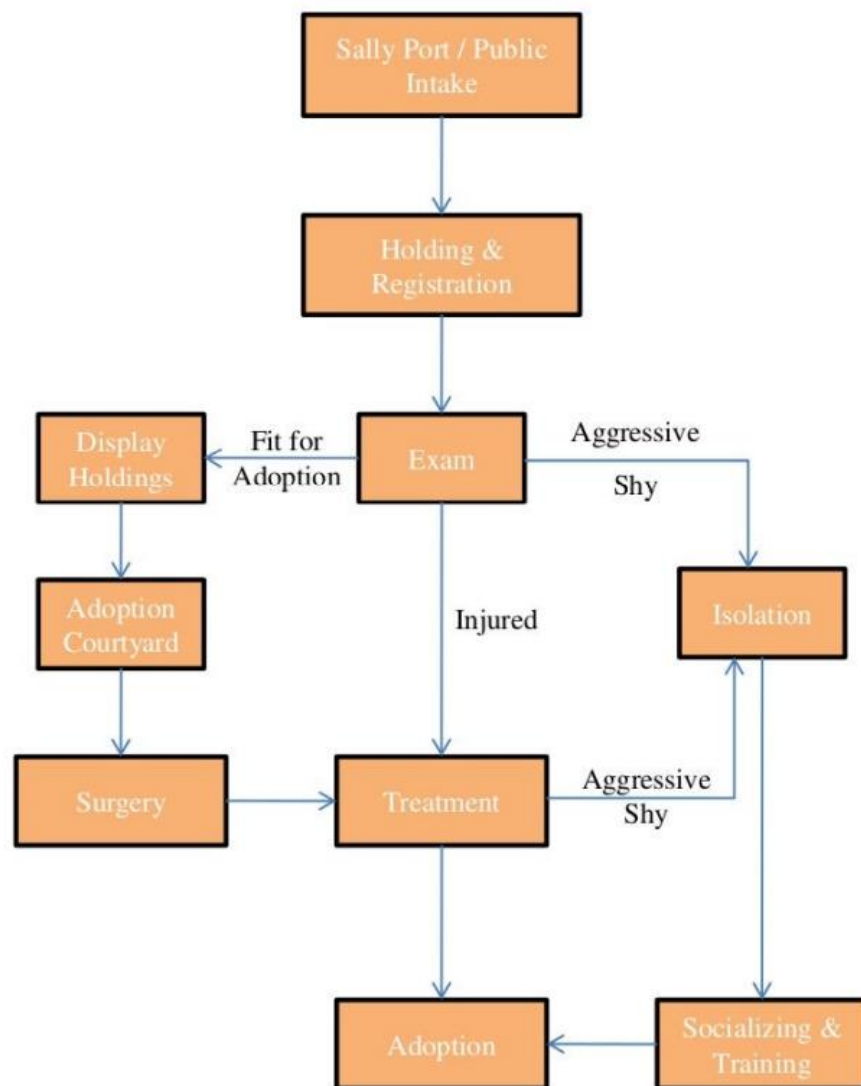


Figure 104: Circulation from Public Intake

Source: Rao, 2016



Figure 105: Space Analysis

Source: Rao, 2016

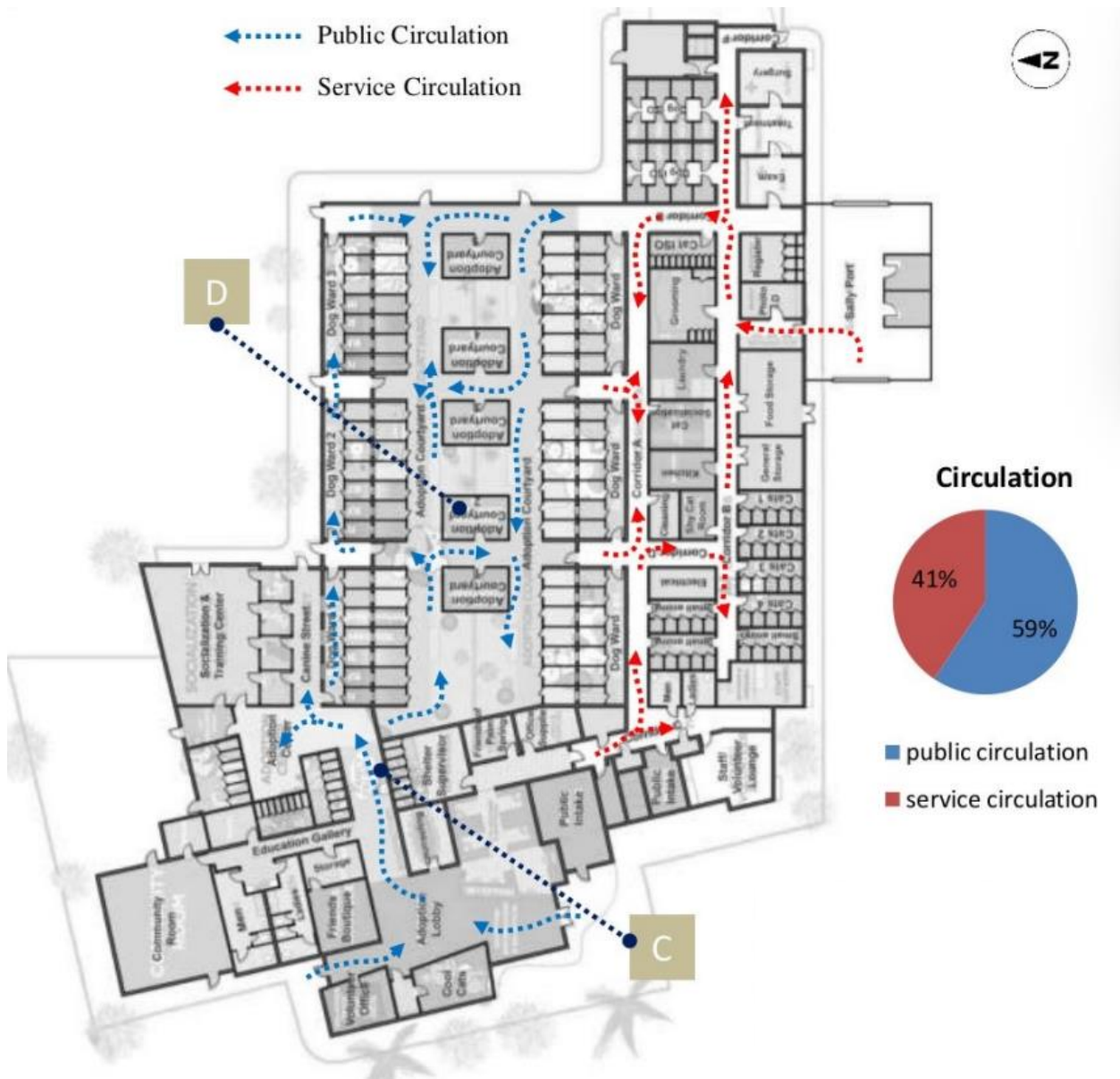


Figure 106: Circulation Analysis

Source: Rao, 2016

3.7.7. Inferences

- Supports socialization of animals
- Educated general people and raise voice against animal cruelty
- Water is recycled from adjacent sewerage plants and used for cleaning and landscape irrigation
- Provision of PV Cells to handle 30% energy load.
- Glorious entrance lobby to display the animals available for adoption.

3.8. SPCA- Animal Care Center for Dogs and Cats

3.8.1. Overview

Location: Lone Star, Dallas, Texas, USA

Architects: Jackson and Rayan Architects

Landscape Architects: Linda Tycher and Associates

Area: 3,900 sq.m.

Capacity: 182 Dogs

: 115 Cats



3.8.2. Introduction

The SPCA of Texas transformed this structure, originally a printing manufacturing warehouse, into one of the best animal re-homing centers in the country. Today, it is a frequent destination for residents of Dallas.

“Everything we see, and touch has an element of design. Life is better when thoughtful design is applied to everything from the simple to the complex”

Using retail techniques to showcase the animals has led to skyrocketing adoptions since the facility opened. Dogs are displayed in colorful glass-enclosed rooms that are visible to people passing by. Visitation rooms are large and in plentiful numbers to make the meet-and-greet process easy and enjoyable for both dogs and families. The cat rotunda showcases the cats in large, glass-fronted cages that are brightly lit and creatively arranged to give the cats private, secure habitats. Separate areas are provided for new arrivals, veterinary care, rescue and cruelty investigations, and administration offices. (Architects, 2013)

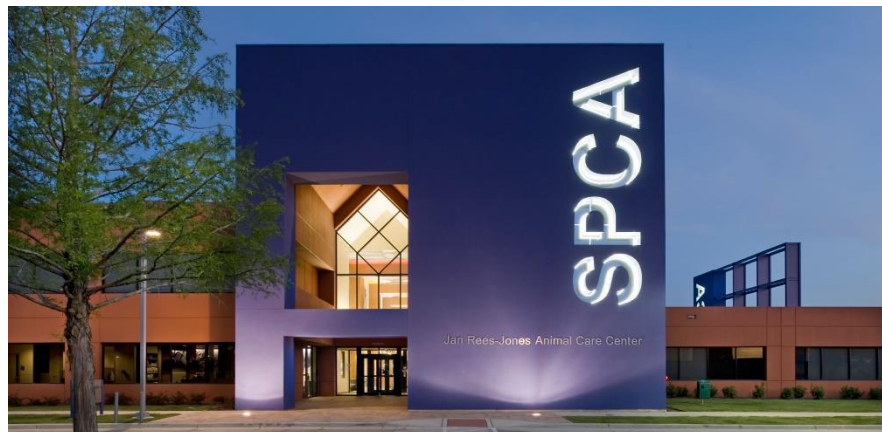


Figure 107: SPCA of Texas

Source: Architects, 2013

3.8.3. Reason for Selection

- The facility provides beautiful gallery spaces where people can see the dogs for adoption.
- The facility provides great adoption lobbies and spaces.

3.8.4. Functional Module

Specific program components:

- 12 Dog pods, 24 cat condos
- Surgical suites with prep areas
- Clinic and exam areas
- Animal health equipment
- Retail area related support spaces

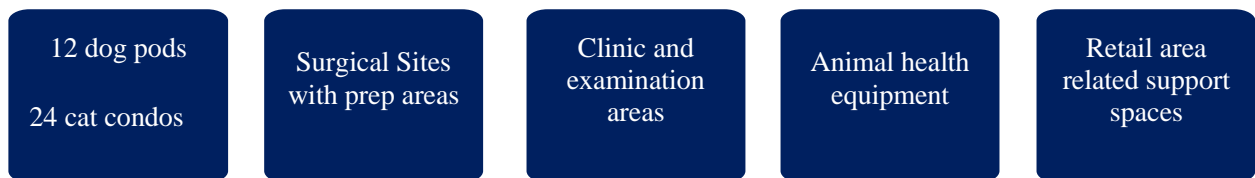


Figure 108: Specific Program Components for SPCA of Texas

Source: Architects, 2013

Exterior components:

- Outdoor play areas
- Detached dogs run with canopies
- Full perimeter security, donor walks, plaza with existing donor brick



Figure 109: Exterior Components of SPCA of Texas

Source: Architects, 2013

3.8.5. Design Expression

1. Circulation Lobby

Hallway gives a very dramatic feeling to the viewers. It portrays animals as celebrities and takes away the essence of typical shelter. It has a dual function with a retail support space along with adoption lobby.

2. Kennel Types

Dogs are displayed in colorful glass-enclosed rooms that are visible to people passing by. Using retail techniques to showcase the animals has led to skyrocketing adoptions since the facility opened.

Service access is provided from the back of each kennel. Dog jewel boxes wound up being a spacious 50 sq. ft. They are arranged in six self-contained pods, with each pod of eight jewel boxes having its own distinct bright colors.

3. Cat Rotunda

The cat rotunda showcases the cats in large, glass-fronted cages that are brightly lit and creatively arranged to give the cats private, secure habitats.

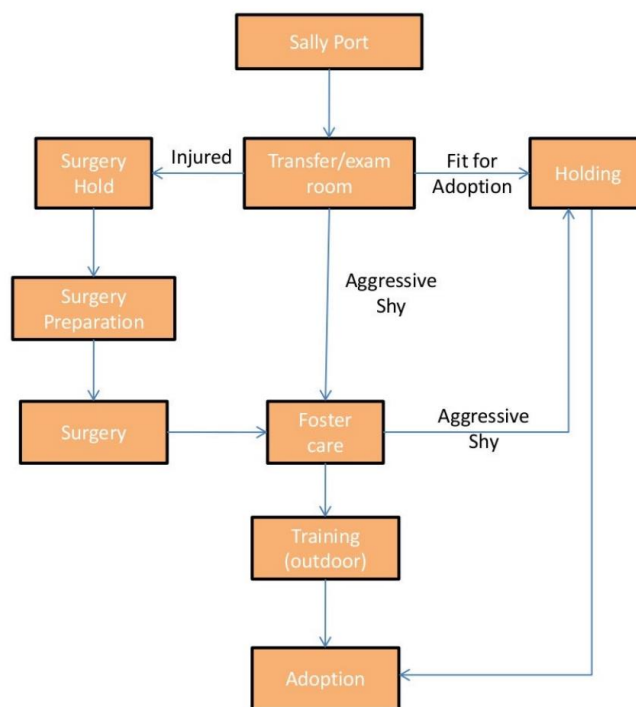


Figure 110: Circulation from Sally Port

Source: Rao, 2016

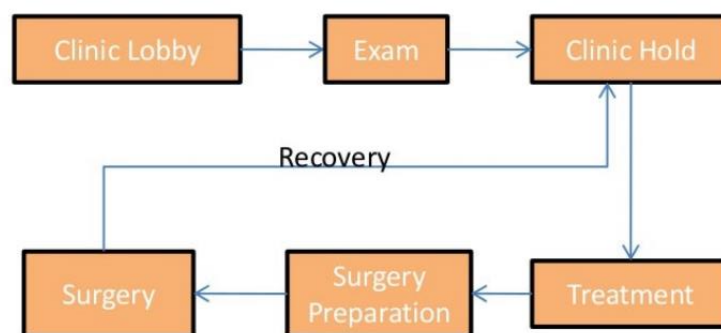


Figure 111: Circulation within Clinic Zone

Source: Rao, 2016



Figure 113: Hierarchy of Zones

Source: Rao, 2016

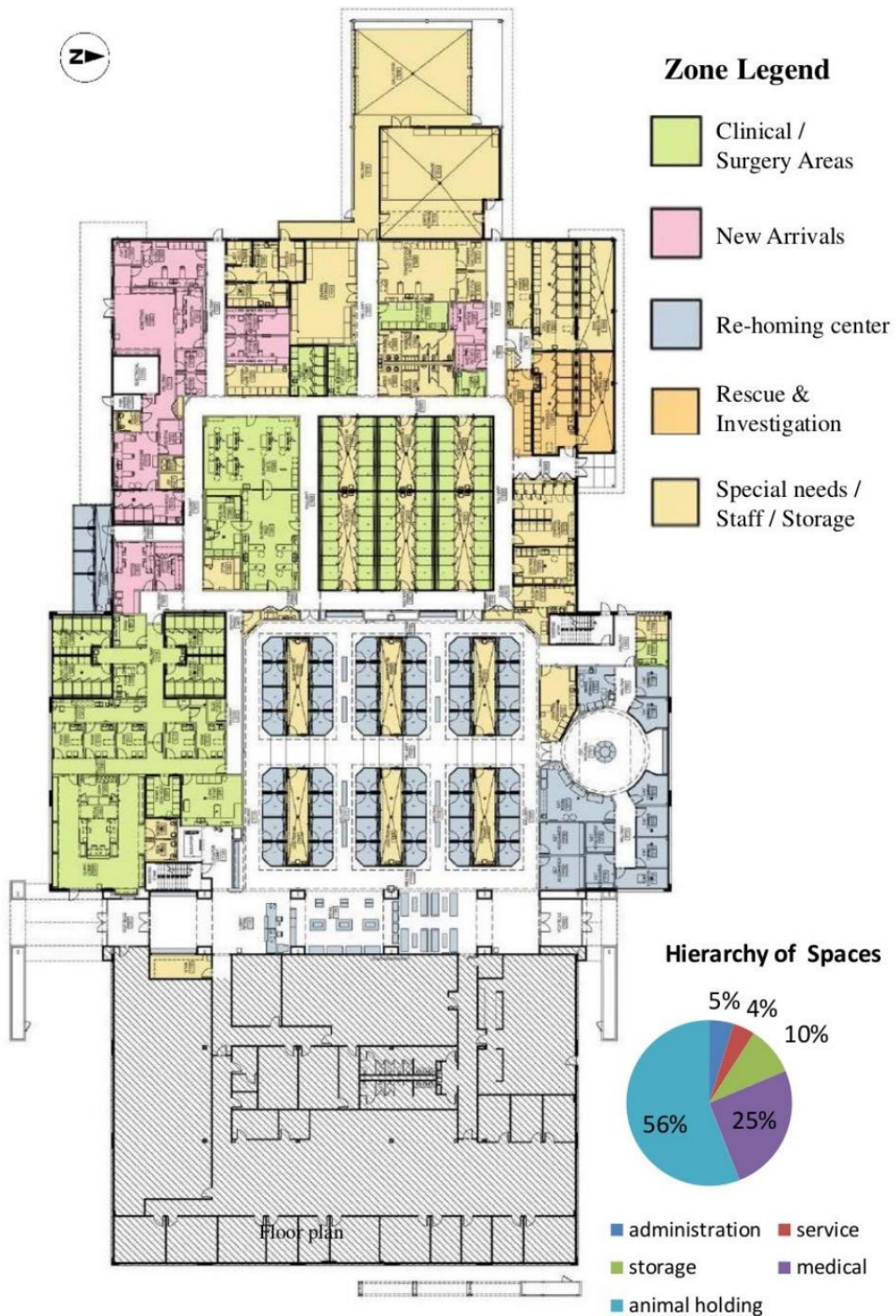


Figure 114: Hierarchy of Spaces

Source: Rao, 2016

3.8.6. Inferences

- Separate entries for vehicle and pedestrians.
- User friendly interior with effective circulation leading to skyrocketing adoptions.
- Interactive and multifunctional spaces that promotes adoption and retail spaces
- A design which is both practical and beautiful redefining the essence of typical shelters as unfriendly impoundments.
- Visitation rooms are large and in plentiful numbers to make the meet-and-greet process easy and enjoyable for both dogs and families.

3.9. Dogchitecture: Dog Shelter

3.9.1. Overview

Location: Moscow, Russia

Architects: WE Architecture

Area: 1,430 sq.m.

Project Initiation: 2018 A.D.

Landscape Design: MASU Planning



3.9.2. Introduction

Copenhagen firm WE Architecture had completed a proposal for a “Dog Center” in Moscow that challenges traditional notions of animal shelters. Nestled in the countryside, the one-story pavilion will rely on a series of courtyards divided by pergolas that disappear into the landscape. The firm notes that the courtyards, which provide enclosed outdoor space for the dogs, allow the center “to avoid the 'jail-like' fencing which is often associated with dog shelters.” (Comberg, 2018)

WE, in collaboration with MASU Planning, hopes to create a “healthy and inspiring environment for sheltered dogs and for the different people who will visit and work at the Center.” The project accomplishes its atmospheric goals by complimenting steel pillars with wooden rafters. The rafters extend to create an exterior overhang which functions as “a sun screen in summer time and as an exterior cover/hallway on rainy days.” As visitors approach the building, the green roof, which sits atop the wooden rafters, is meant to serve as a “fifth facade” that can blend in easily with its wooded surroundings. Extensive outdoor seating space bleeds into greenery, inviting both human and animal recreation.



Figure 115: Dogchitecture Bird's Eye View

Source: Comberg, 2018

3.9.3. Reason for Selection

- The facility challenges all the traditional design practices followed before.
- The facility has a wonderful blend of indoor and outdoor spaces.

3.9.4. Concept

For the Dog Shelter, WE proposed an architectural design shaped as a light pavilion laying softly in the landscape. The pavilion opens towards the surroundings, resulting in an experience of light and nature for the users and at the same time inviting the people passing by to visit the dog shelter, learn about dogs and who knows- maybe bring one home with them. (Architecture, 2018)

“The architectural concept for the Dog Center will support the overall vision about a healthy and inspiring environment for sheltered dogs and for the different people who will visit and work at the Center.”

The pleasant natural surroundings of the shelter have been the starting point for formulating the concept. As light pavilion sitting in the glade of the forest. The structure is organized as a 1-story pavilion. The pavilions are organized to create a series of courtyards, serving as exterior areas for the dogs. The courtyards scheme makes it possible to avoid the “jail-like” fencing which is often associated with dog shelters.

“Visually, the roof will float over the building, giving the impression of a light cover in the middle of the forest.”

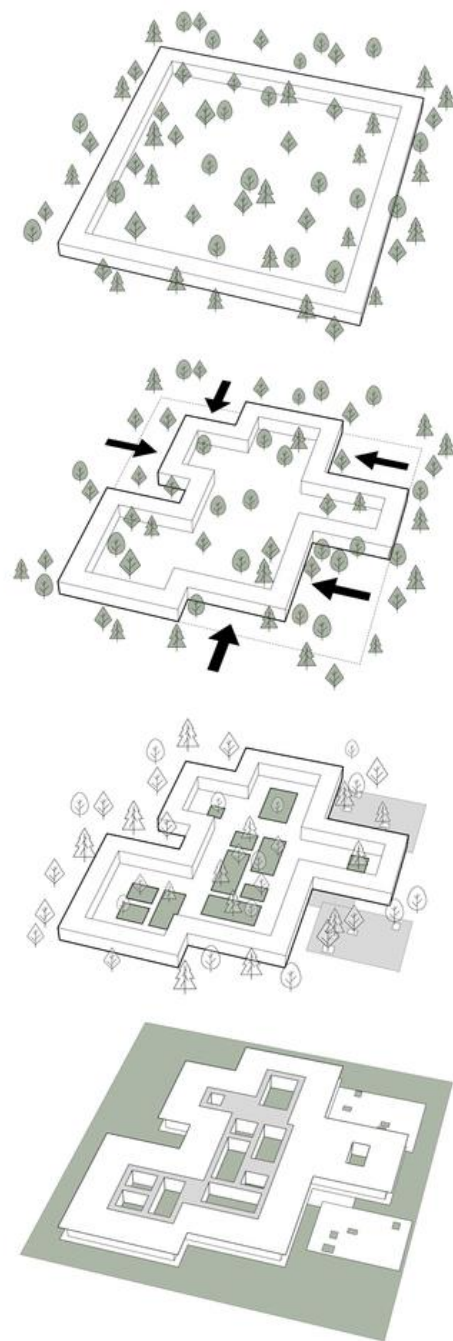


Figure 116: Dogchitecture Building Design Concept

Source: Comberg, 2018

3.9.5. Design Expression

i. Type of Housing

The facility follows the design concepts of individual housing for the dogs. The kennels are kept made in the real-life room style. In such kennel, the dogs and the people can interact with each other in a more effective way.



Figure 117: Dogchitecture Kennels

Source: Comberg, 2018

ii. Construction Materials

One of the main focuses of the project is to create a simple yet elegant structure that emphasizes the feeling of being inside a pavilion. The structure is therefore consisting of a combined steel, wood and concrete structure. The steel pillars and beams support an elegant wooden roof structure with tall rafters. Concrete walls serve as stabilizing elements. The rafters emphasize the roof and the building becomes a subtle three-dimensional mosaic. They form the unifying element that gives coherency to the project.



Figure 118: Dogchitecture Entrance

Source: Comberg, 2018

When viewed from the outside, the rafters make it possible that the line of the roof is very thin. This gives a light feeling and blurs the transition between inside and outside. At the same time, the overhang works as a sun screen in summer time and as an exterior cover/hallway on rainy days. The concept, materiality and attention to detail work together to create a more refined feeling, even when it comes to caring for animals.

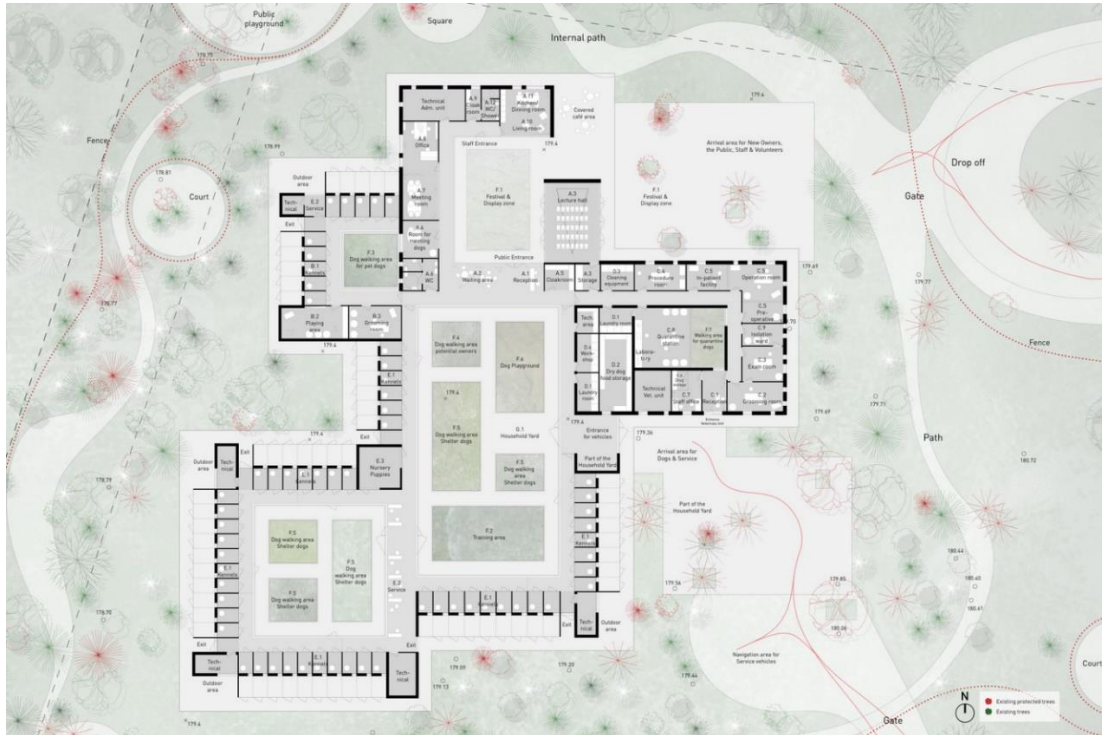


Figure 119: Floor Plan

Source: Comberg, 2018



Figure 120: Exterior Interior Connection

Source: Comberg, 2018

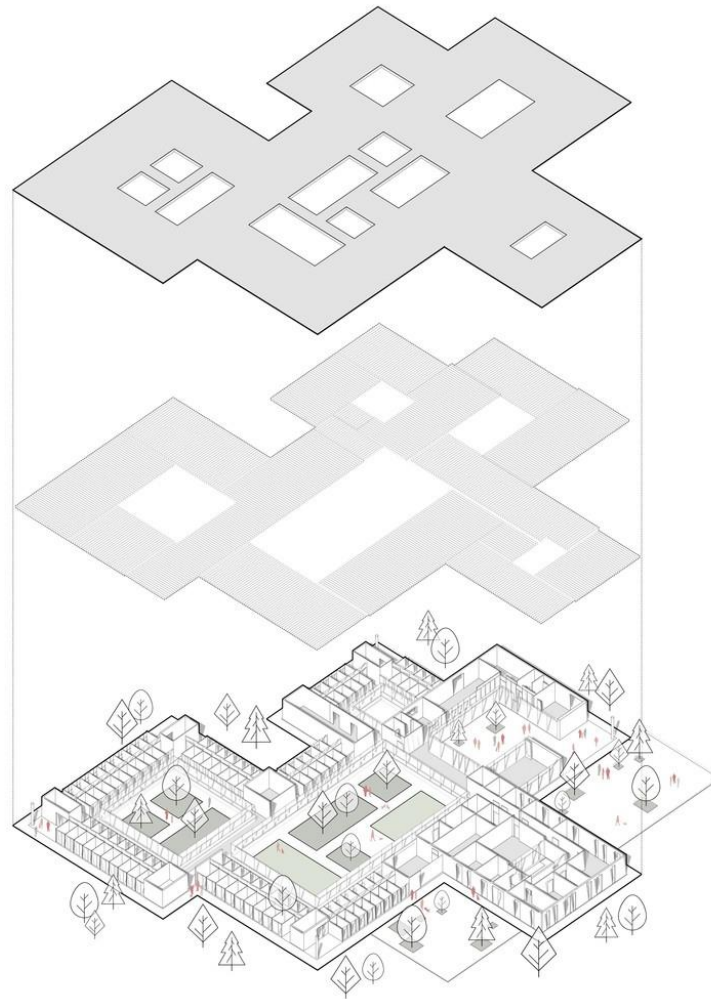


Figure 121: Dogchitecture Isometric Floor Plan

Source: Comberg, 2018

3.9.6. Inferences

- Internal Courtyard serving as external areas for the dogs creates a barrier without the cages in the traditional dog shelters.
- The extensive outdoor seating space bleeds into greenery, inviting both human and animal recreation
- The space allocation is done such that the guests and dogs can interact and play with each other in a variety of indoor and outdoor spaces.

Regional Case Study

3.10. Blue Cross Society

3.10.1. Overview

Location: Pune, India

Area: 10,000 sq.m.

Founder: Mr. Himanshu Chanda

Establishment: 1994 A.D.

Capacity: 250-300 Dogs



3.10.2. Introduction

The Blue Cross Society of Pune, founded in 1994, is a non-profit organization working for the welfare of animals. The Blue Cross Society, appalled by the horrendous existing system of clobbering or poisoning stray dogs to a slow and painful death, persuaded the then Mayor, Mr. Shivarkar to implement the WHO recommended Animal Birth Control and Anti-Rabies Programme for stray dogs in the city. The Pune Municipal Corporation allotted 10,000 sq. ft. of land in the Naidu Hospital Complex for the operation theatre and kennels. From a modest beginning, the Blue Cross surgeons today operate on an average of 250-300 dogs per month. To date, over 20,000 dogs have been sterilized. (Rao, 2016)



Figure 122: Blue Cross Society, Pune, India

Source: Rao, 2016

3.10.3. Reason for Selection

- One of the largest animal welfare organizations of India.
- Connection with indoor and outdoor spaces.

3.10.4. Functional Module

Major Programs for the rescue shelter include:



Figure 123: Functional Module of Blue Cross Society Pune

Source: Rao, 2016

- **Rehoming of Abandoned and Stray Animals**
Both puppies, kittens and adult dogs and cats are brought to the Blue Cross dog pound. Some are healthy, others emaciated or even sick and injured. They nurse them back to health and find new homes. Admittedly, this is an uphill task!
- **Counseling for Pet Owners**
Often, people who keep a pet have no former experience of handling animals. We believe that our volunteers can offer tips, advice and solutions so that owning a pet becomes an enriching and rewarding experience for the owners and neighbors alike and also prevents unnecessary hardships or even cruelty to pets.
- **Workshops**
With the help of veterinary doctors, trainers and animal behaviorists, the Blue Cross periodically holds workshops on subjects such as primary first aid to animals, handling and training dogs to obey simple commands.
- **Volunteers and Members' Meets**
In addition to the Annual General Meeting, Blue Cross members and volunteers interact from time to time for events such as fundraising, awareness drives, guest lectures etc.
- **Veterinary Hospital and Shelter**
Equipped with OPD, state-of-the-art facilities for diagnosis, pathology, surgery and recovery wards, kennels for large as well as small domestic animals.
- **Awareness Drives**
For educating the public about the laws related to animals, the need for neutering pets and strays, how to deal with hostile dogs and inculcating a love for animals. Anti-rabies vaccination camps and sterilization drives.
- **Sale of Products**
Products such as greeting cards, gift tags, book marks, pen stands, decorative paper bags, stickers, caps and T-shirts. Responsible pet Ownership.

3.10.5. Treatment

Embarked upon an ambitious venture of building a state-of-the-art animal hospital and shelter at Keshavnagar in Mundhwa on 100,000 sq. ft. of land obtained on lease from the Pune Municipal Corporation. The hospital complex has 2 operation theatres for large animals, and a smaller one for small animals, an intensive care unit, kennels for pet dogs and padlocks. (Rao, 2016)

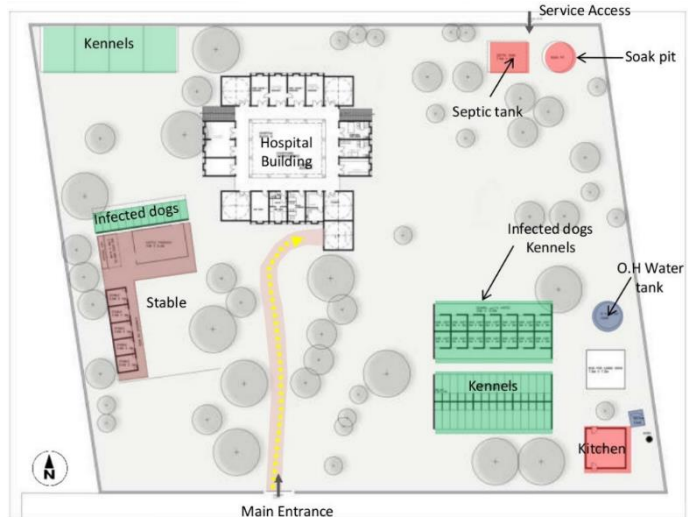


Figure 124: Blue Cross Society Plan

Source: Rao, 2016

3.10.6. Design Expression

- **Space Arrangement**

The hospital building is built around a courtyard which caters to providing natural cross ventilation and supply of fresh air in the interiors of the block. It provides fresh air, improves oxygen supply and dilutes odors. Internal courtyard for the wounded animals provides a sense of security and a connection to nature. It is also proven useful for functional division of spaces into different zones.



Figure 125: Blue Cross Society Courtyard

Source: Rao, 2016

- **Roof Structure**

Arched concrete roofing the rhythmic arched roof provides a unique architectural identity increasing the floor height considerably as required in hospitals. It is also durable in terms of strength and stability. An arched roof extends the structural capabilities of the arch by placing a roof over a series of parallel arches. The space that is created once an arched roof is installed is called a vault.



Figure 126: Concrete Roof Vaults

Source: Rao, 2016

- **Landscape Consideration**

Maximum number of trees and vegetation are planted all around the external space giving the visitors and animals a feeling of walking into the nature. It is very effective in creating a healing environment for traumatized and stressed animals. Also, almost all interiors are lit with natural daylight promoting health and healing.



Figure 127: Blue Cross Society Examination Space

Source: Rao, 2016



Figure 128: Landscape at Blue Cross Society

Source: Rao, 2016

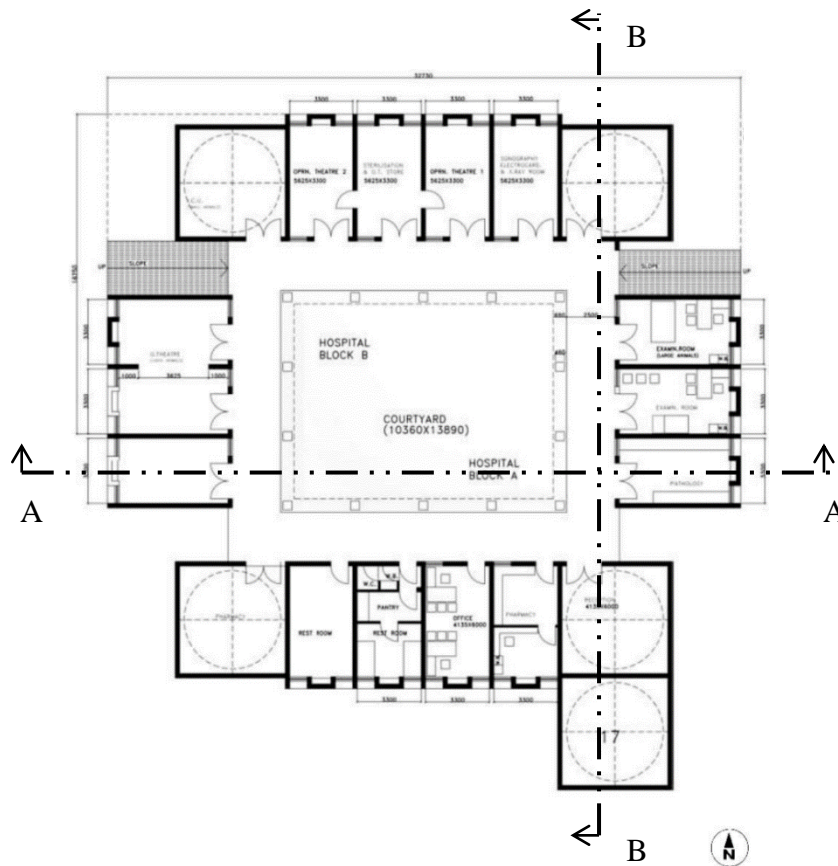


Figure 129: Blue Cross Society Ground Floor Plan

Source: Rao, 2016

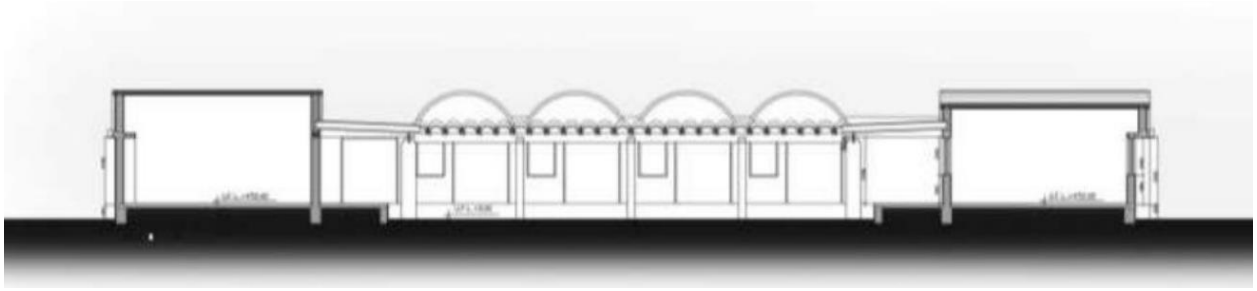


Figure 130: Section at AA

Source: Rao, 2016

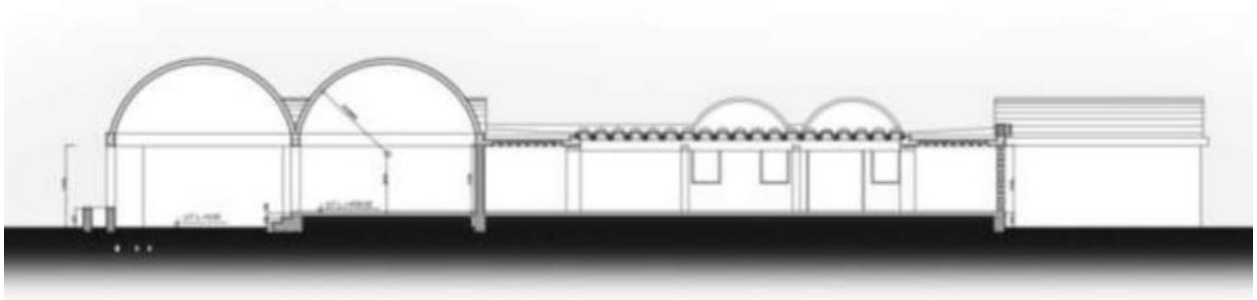


Figure 131: Section at BB

Source: Rao, 2016

3.10.7. Inferences

- Outdoor kennels and runs are present in the site for healthier animal well-being.
- Connection with indoor and exterior spaces through courtyards.
- Maximum number of trees and vegetation for the animals to feel that they are connected with the nature.

3.11. Comparative Analysis

Table 14: Comparative Analysis of Animal Care Centers

S. No.	Case Studies	Site Area	Built- Up Area	Built- Up vs. Open Space
National				
1.	Sneha's Care	4,070 sq.m.	1,137.64 sq.m.	Built Up: 27.95% Open Space: 72.05%
2.	KAT Center	2,035 sq.m.	826.29 sq.m.	Built Up: 42.62% Open Space: 57.38%
3.	SPCA Nepal	1,530 sq.m.	652.07 sq.m.	Built Up: 40.6% Open Space: 59.4%
International				
4.	Palm Springs	21,000 sq.m.	3,183 sq.m.	Built Up: 15% Open Space: 85%
5.	SPCA of Texas	11,700 sq.m.	3,900 sq.m.	Built Up: 25% Open Space: 75%
6.	Dogchitecture	2,980 sq.m.	1,430 sq.m.	Built Up: 48% Open Space: 52%
Regional				
7.	Blue Cross Society	10,000 sq.m.	2,000 sq.m.	Built Up: 20% Open Space: 80%

Source: Author

S. No.	Case Studies	Accessibility	Circulation Path	Type of Housing
National				
1.	Sneha's Care	Single access with no focus to the entrance	Organized around the dog cage placements	Group Housing
2.	KAT Center	Single access leading to the admin block and the parking	Organized around the contour and central road	Individual and Group Housing
3.	SPCA Nepal	Single access leading to the space for new dogs	Organized around the central courtyard	Group Housing
International				
4.	Palm Springs	Access for adoption, service and rescue	Organized around adoption courtyard	Individual and Group Housing
5.	SPCA of Texas	Separate access for adoption, clinic, rescue and service	Organized around adoption zone	Individual Housing

6.	Dogchitecture	Separate access for animals and visitors	Organized around pocket courtyards	Individual Housing
	Regional			
7.	Blue Cross Society	Separate access for visitors and service facilities	Organized such that you walk with nature	Individual and Group Housing

Source: Author

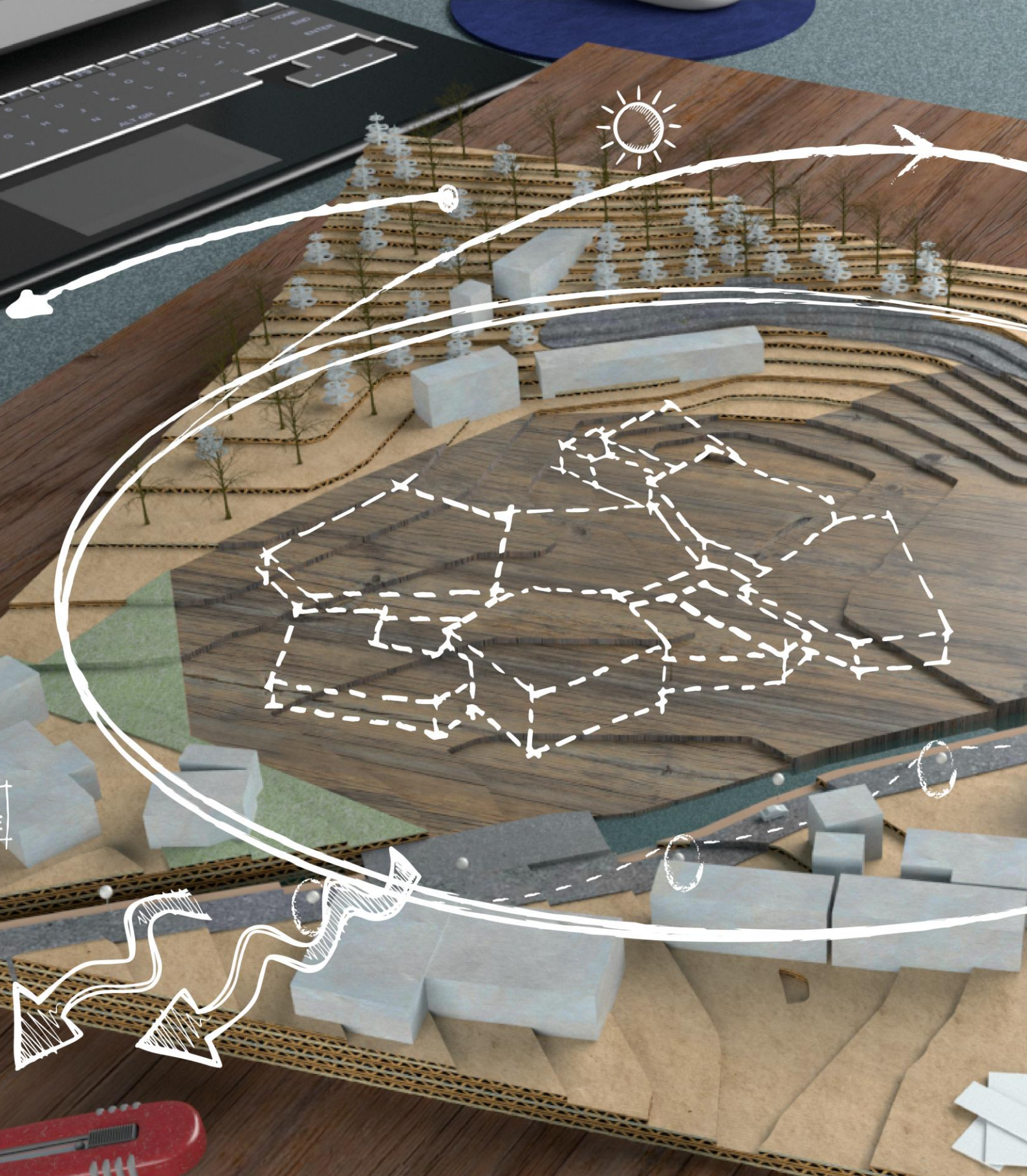
S. No.	Case Studies	Animal Holding Capacity	Animal Occupancy Area	Built-Up area with respect to animal occupancy area
	National			
1.	Sneha's Care	167	583.04 sq.m.	Built Up: 51.25% Animal: 48.75%
2.	KAT Center	86	614.29 sq.m.	Built Up: 74.35% Animal: 25.65%
3.	SPCA Nepal	70+	472.23 sq.m.	Built Up: 72.45% Animal: 27.55%
	International			
4.	Palm Springs	252	1,185 sq.m.	Built Up: 27% Animal: 73%
5.	SPCA of Texas	650	1,305.54 sq.m.	Built Up: 19% Animal: 81%
6.	Dogchitecture	60	249.22 sq.m.	Built Up: 17.45% Animal: 82.55%
	Regional			
7.	Blue Cross Society	300	849.2 sq.m.	Built Up: 42.5% Animal: 57.5%

Source: Author

S. No.	Case Studies	Construction Materials	Landscape
	National		
1.	Sneha's Care	Hollow concrete blocks, steel frame on CGI sheets	Open field towards south of the site
2.	KAT Center	Hollow concrete blocks, steel frame on CGI sheets	No open space, community forest towards south of the site
3.	SPCA Nepal	Hollow concrete blocks, steel frame on CGI sheets	Open field at the center of the site
	International		
4.	Palm Springs	Epoxy resin floors and walls, non-absorptive acoustical ceilings, and stainless-steel casework	Runs throughout the center of the facility

5.	SPCA of Texas	Epoxy and marble floors and non-toxic paints	Open spaces around the facility
6.	Dogchitecture	Steel post and beams with and Concrete shear wall construction	Concrete arches and vaults
	Regional		
7.	Blue Cross Society	Pocket landscape spaces within the facility	Mostly open spaces with central courtyard inside the hospital

Source: Author



SITE ANALYSIS

BARKITECTURE
RESCUE ARCHITECTURE FOR DOGS

SITE ANALYSIS

CHAPTER 4



4.1. Overview

Location: Basundhara, Kathmandu.

Site Area: 12,322.47 sq.m.

: 24-03-02-0.75

Current Use: Government Land

Co-Ordinates: 27°44'03.9"N,

: 85°19'23.1"E

Topography: Slightly Contoured Land

Access: About 180m away from ring road

Zone: Residential Sub-Zone

The site is located in Basundhara, Kathmandu, currently a barren land used for grazing owned by the government. Samakhusi river runs through the north-west boundary of the site giving off a foul smell. The site is surrounded by forest on the south-east and the east of the site is containing a residential area. The site is located moderately far from the main ring-road which is perfect for traffic noise minimization. The proximity of the site also caters the Nepal Police Dog Training Academy.

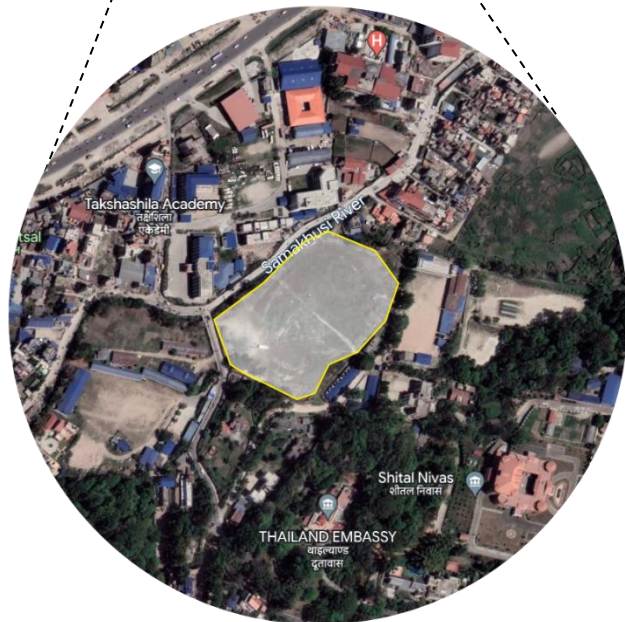
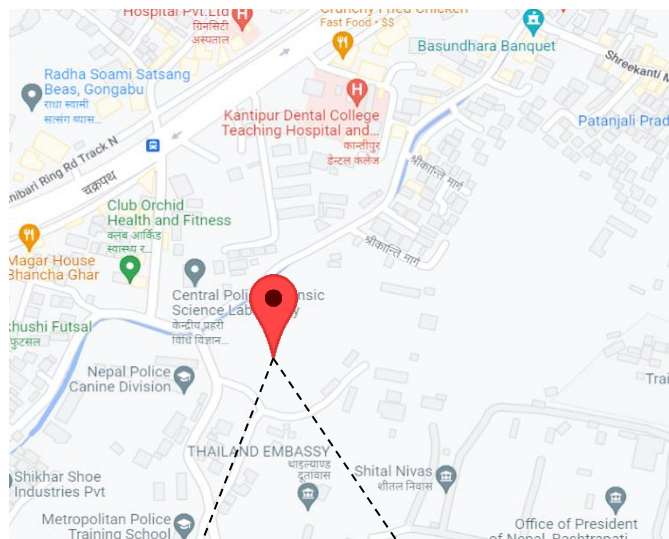


Figure 132: Location Map of Site

Source: Google Maps

4.2. Site Selection

- Located in close proximity to the main road for easy transportation
- But, is far enough so that the noise from the vehicles doesn't create much noise and create unpleasant environment for the dogs
- Close to Nepal Canine Training Academy
- Trees acting as a buffer around the site.

4.3. Site Surroundings

- Mostly open land in the surrounding areas
- Located opposite of the Police Training Academy
- Residential area in the east and west
- Samakhusi river running along the north west

4.4. Site Consideration Factors

4.4.1. Access

- Primary access to the site from the ring-road connected by a 10m wide road
- 8m wide road connecting from the west
- 6m wide road connecting from the north

4.4.2. Visibility

- Not Visible from the main road.
- Visible after travelling 170m from the main road.

4.4.3. Transport

There is access for the public vehicle in the main road. The rest of the way is to be accessed on foot or through a private vehicle.

4.4.4. Distance from Local Veterinary Clinics and Hospitals

There are a number of Veterinary clinics such as Vet for your pet, Kathmandu Veterinary Clinic, etc.

4.4.5. Infrastructures

- **Solid Waste Management:** The solid waste management is done through with the Municipal Garbage Collection
- **Electricity:** The electricity is supplied from Ring Road.



Figure 133: Electrical Distribution for the Site

Source: Author

- **Drainage:** The current drainage is dumped into Samakhusi River.



Figure 134: Drainage in the Samakhusi River

Source: Author

4.5. Bye- Laws

The city lies in the urban expansion zone. According to the bye-laws of the zone, the following are the allowable permits are as follows:

GCR: 40%

FAR: 1.50

Setback: 1.5 m

ROW: 6.5 m

Parking: 20% of site area

4.6. Climatic Analysis

The climate plays a big role in how to design a building, and the amount of isolation needed to achieve a thermal comfort. The mean minimum temperature in Kathmandu is 12°C and the mean maximum temperature is 25.7°C. The average rainfall in the valley is 1448mm. The figure below shows the maximum and the minimum temperature in the valley throughout the year. (Meteoblue, 2022)

Climatic analysis is crucial for the project, to understand the extreme sunlight change from winter to summer. During the winter, the low sun angle provides with little sunlight and long shadows for a very short amount of time while in summer, the high sun angle gives long hours of sunlight.

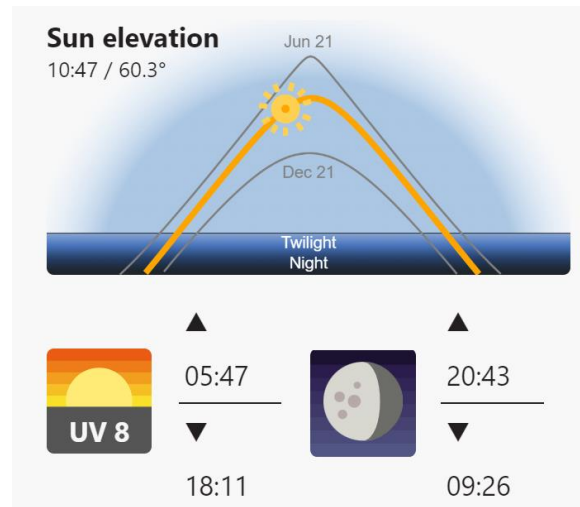


Figure 135: Average Sun Elevation

Source: Meteoblue, 2022

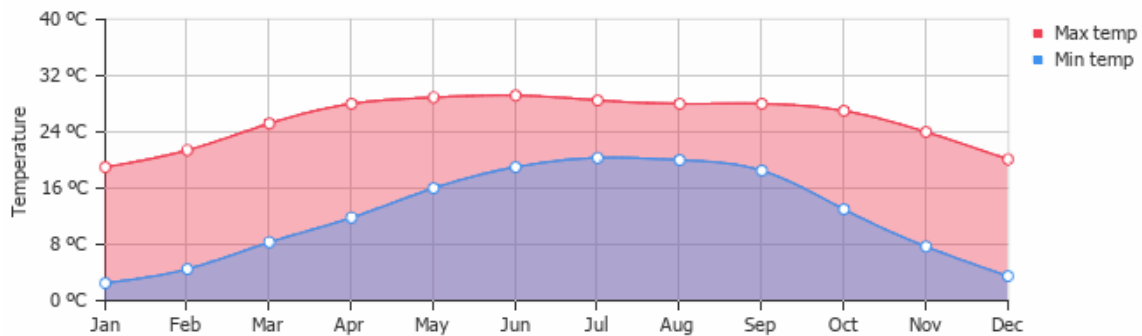


Figure 136: Average Mean min. and max. Temperature of Kathmandu

Source: (Climate, 2022)

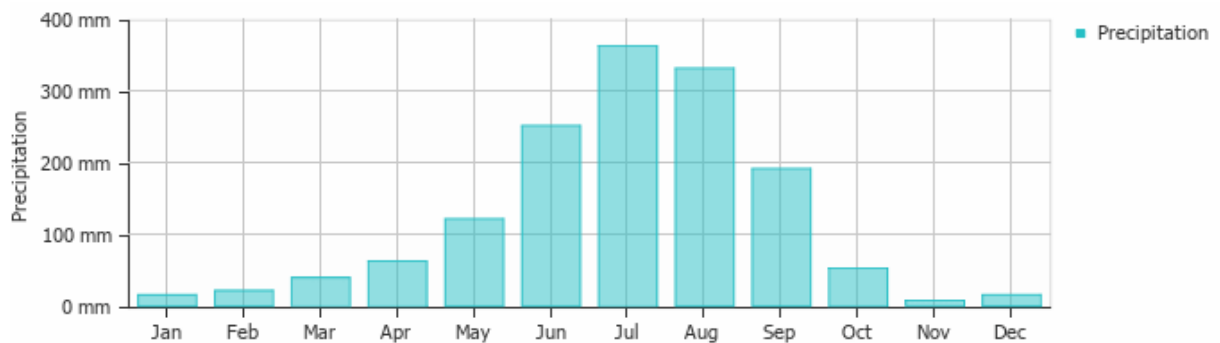


Figure 137: Average Precipitation in Kathmandu

Source: (Climate, 2022)

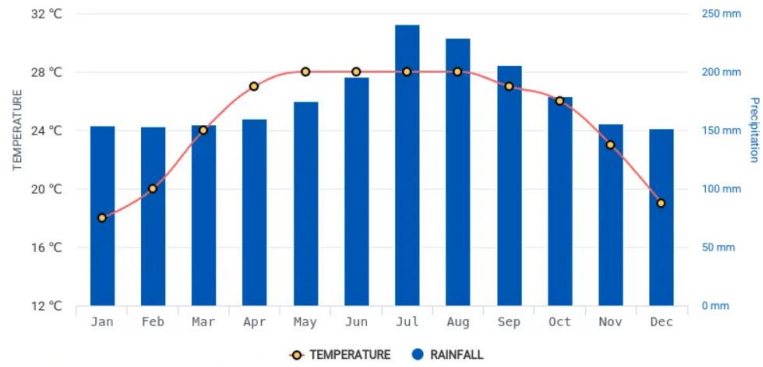


Figure 139: Annual Mean Temperature and Rainfall Comparison Diagram

Source: Hikersbay, 2022

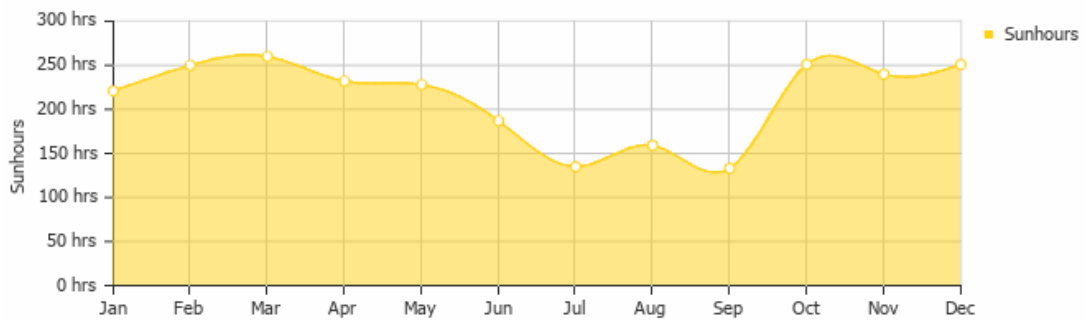


Figure 138: Average Monthly Sun hours in Kathmandu

Source: (Climate, 2022)

4.7. Public Services and Landmarks

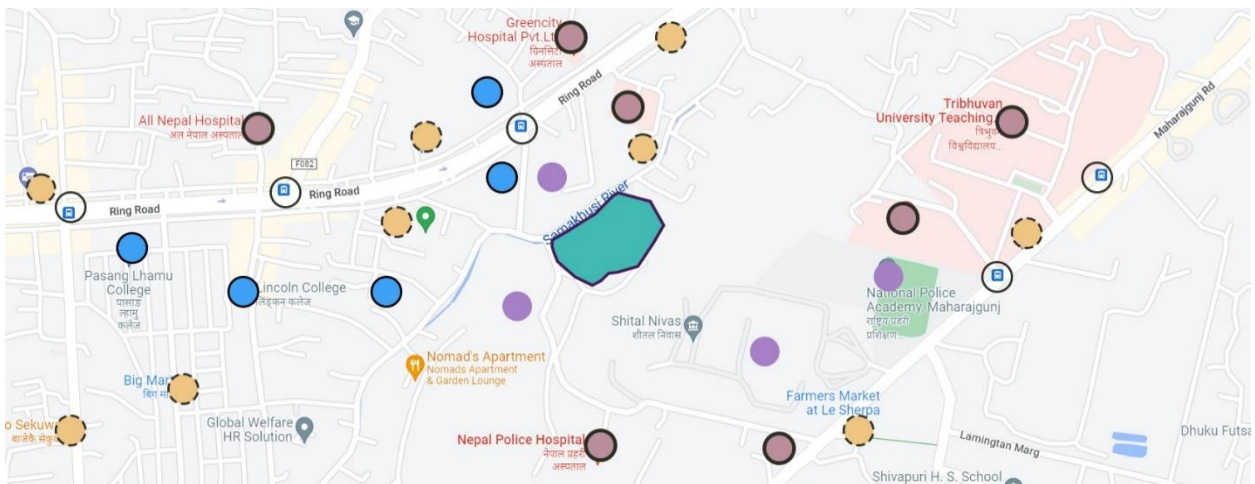


Figure 140: Public Services and Landmarks

Source: Google Maps

● Site

● Government Buildings

- President's House
- Nepal Police Academy
- Nepal Police Canine Division
- Central Police Forensic Science Laboratory

● Mixed-Use Commercial

- Banks
- Restaurants
- Market
- Banquets

○ Transportation

- Bus Stop

● Health Centers

- T.U. Teaching Hospital
- Nepal Police Hospital
- International Friendship Children's Hospital
- Kanti Children's Hospital
- Greencity Hospital
- All Nepal Hospital
- Kantipur Dental Hospital

● Educational Institutes

- Taksashila Academy
- Lincoln College
- Pasang Lhamu College
- Nepal Police School
- Kathmandu Global School

4.8. Road and Accessibility

The site lies in close proximity to the ring-road which is a two-way road, the primary access road to the site is connected by an 8m wide road without any pedestrian foot-paths. The secondary road is a 6m wide road with Samakhusi river running along the edge which separated the site and the road.

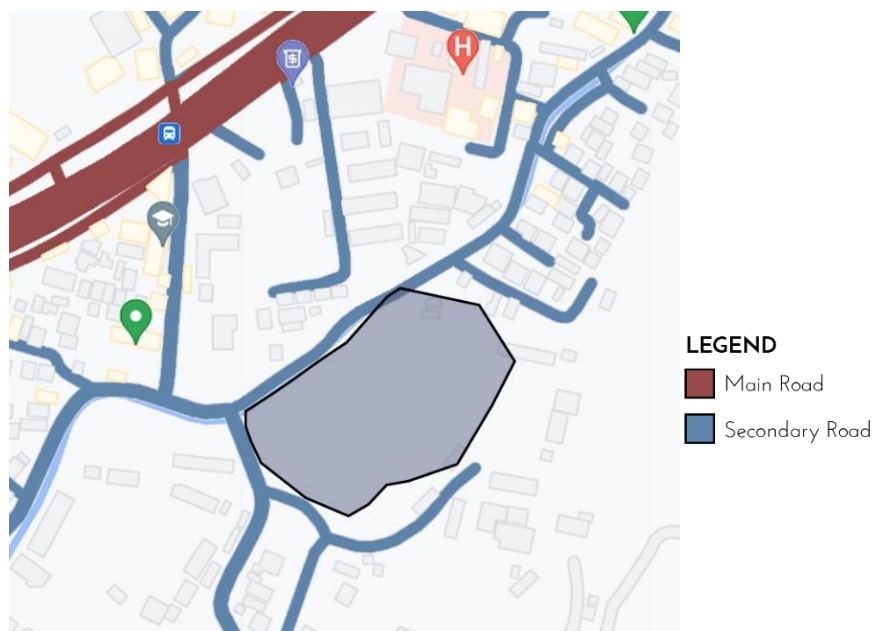


Figure 141: Road and Accessibility of the Site

Source: Author

4.9. Visual Analysis

The skyline of the area has diversity, because of the variety of heights and different type of environments. The various landscape sand environments that can be perceived from the site are illustrated below.

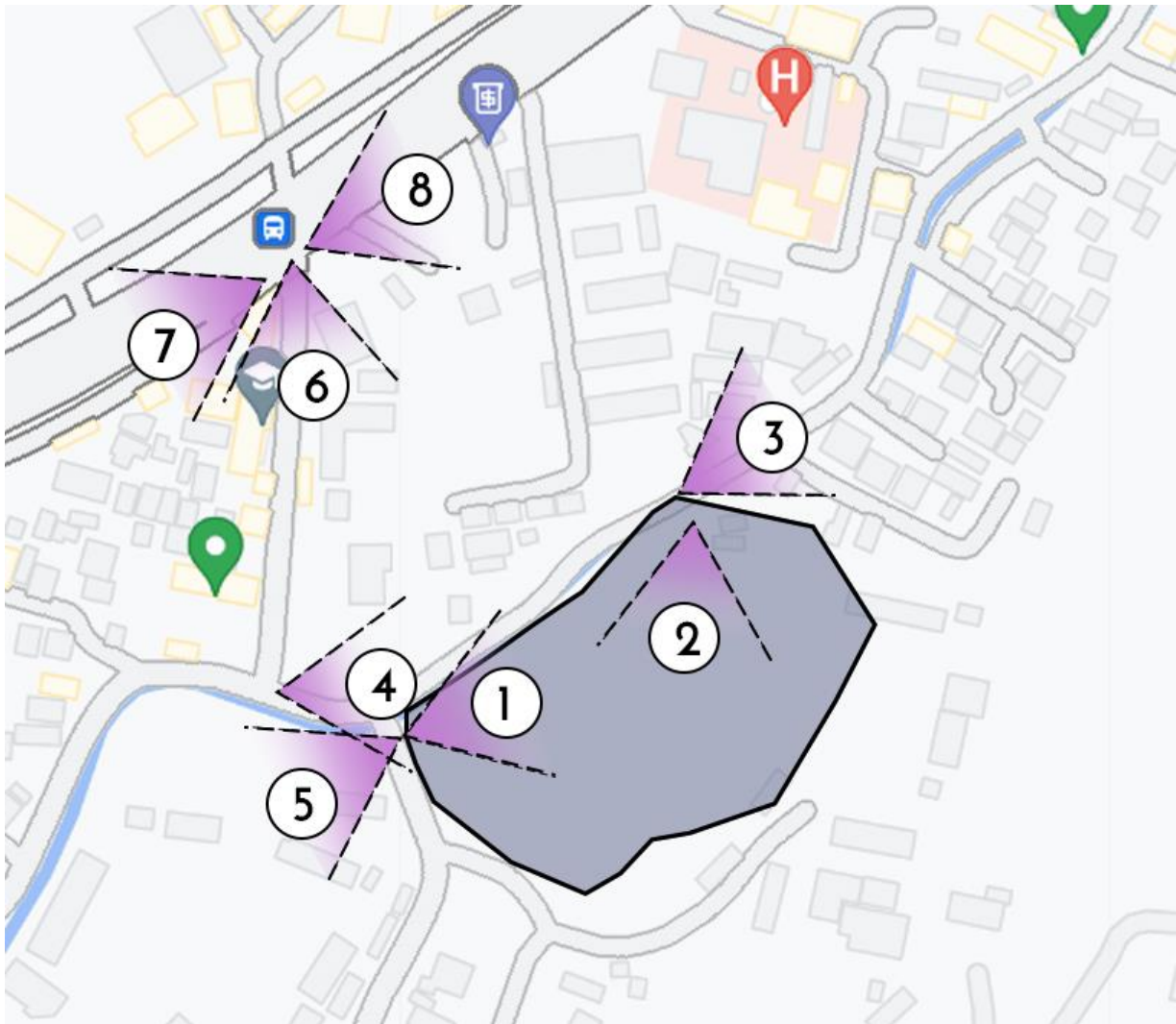


Figure 142: Visual Analysis of the Site

Source: Author



Figure 143: Scenes in Correlation to the Visual Analysis Aspects

Source: Author

4.10. Figure Ground Analysis

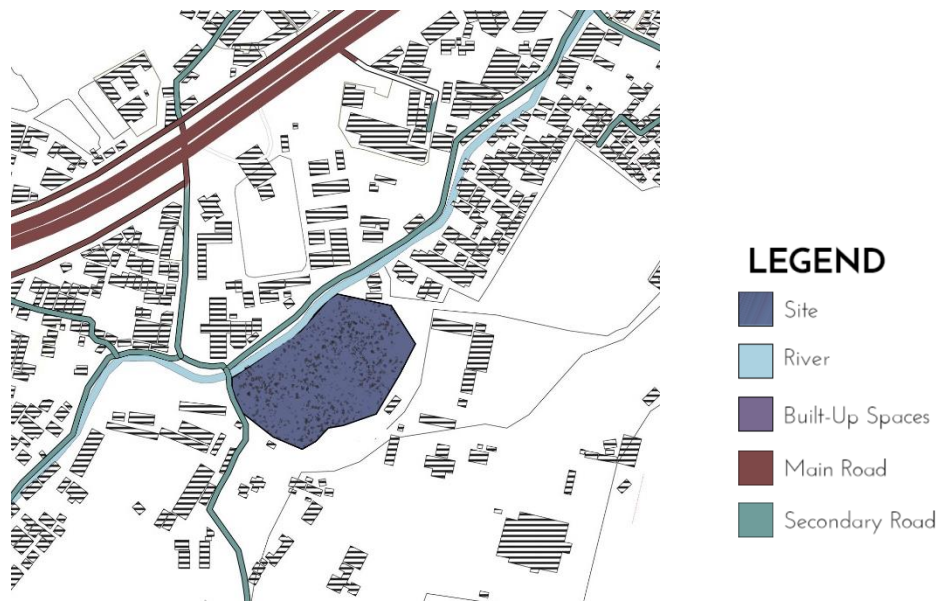


Figure 144: Figure Ground Analysis

Source: Author

4.11. Site Profile and Solar Path

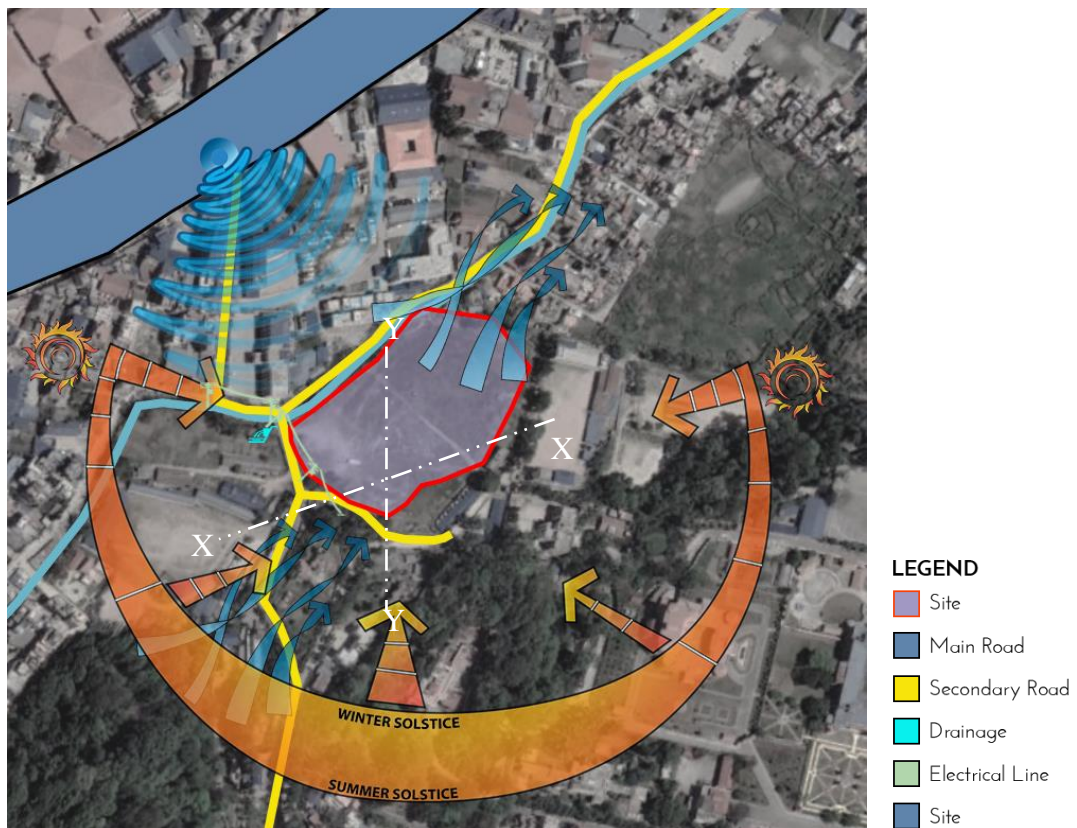


Figure 145: Solar Path and Site Amenities

Source: Author

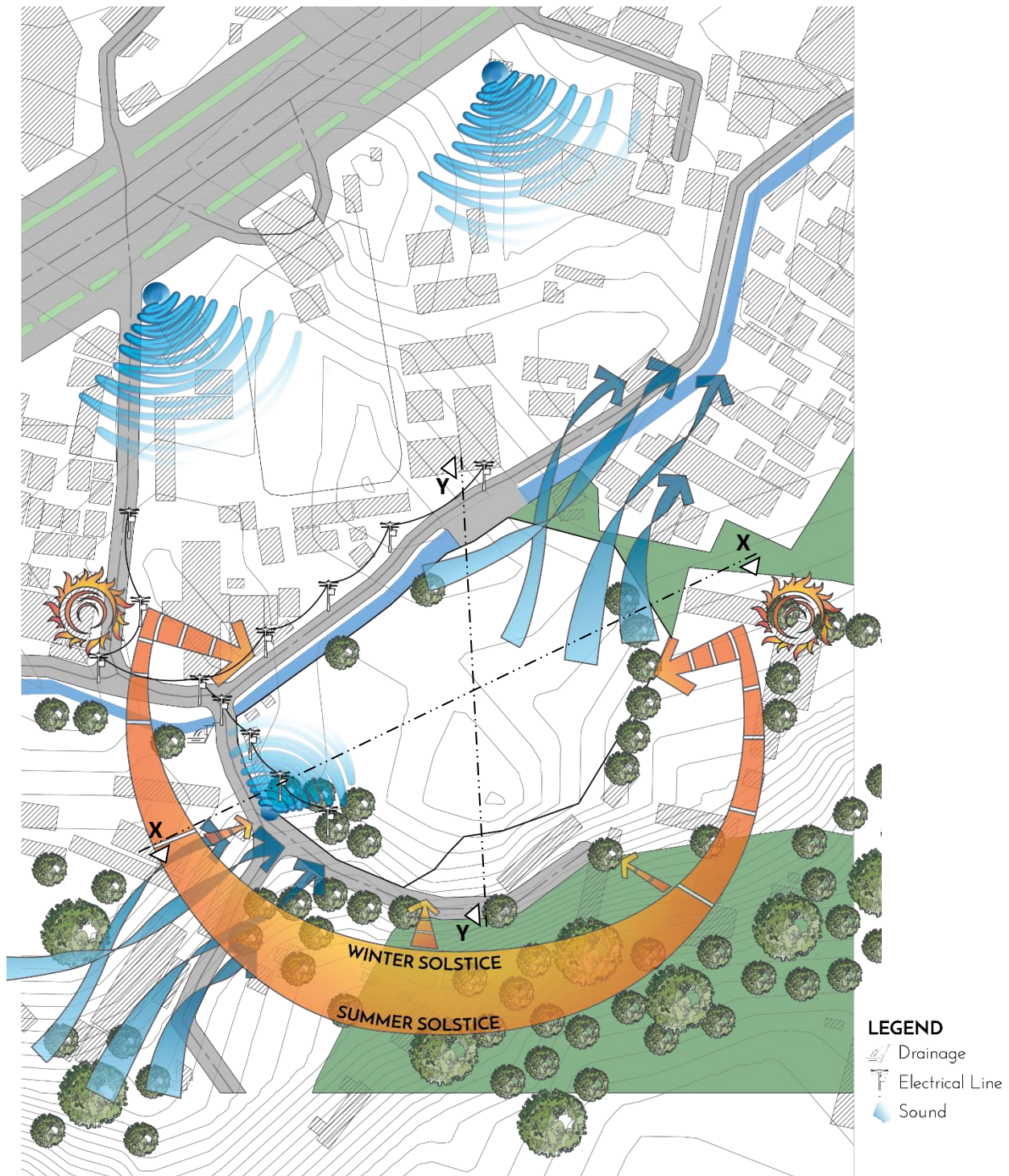


Figure 146: Solar Path and Wind Direction Diagram

Source: Author

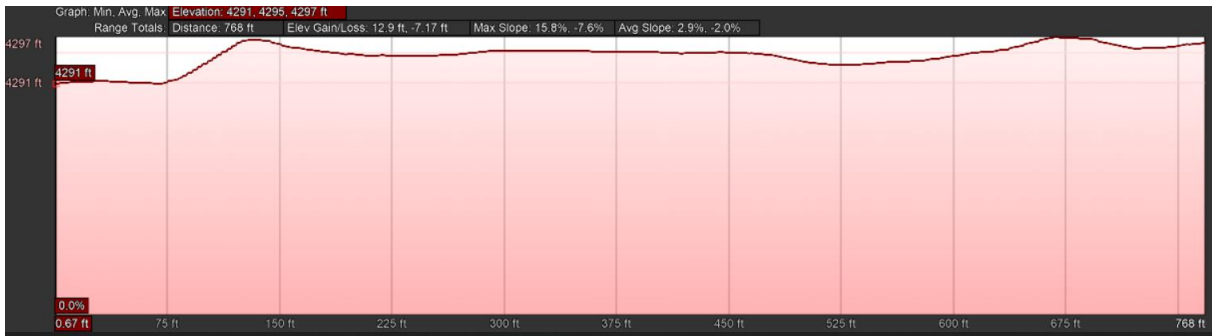


Figure 147: Site Profile along X-X

Source: Google Earth

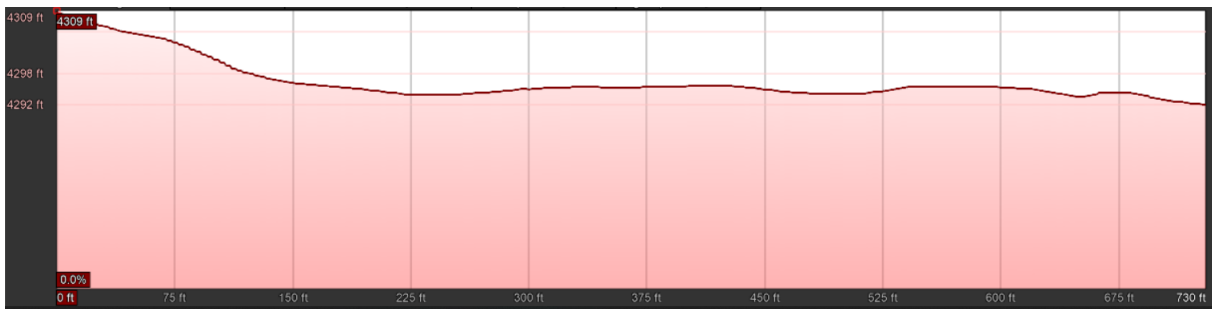


Figure 148: Site Profile along Y-Y

Source: Google Earth

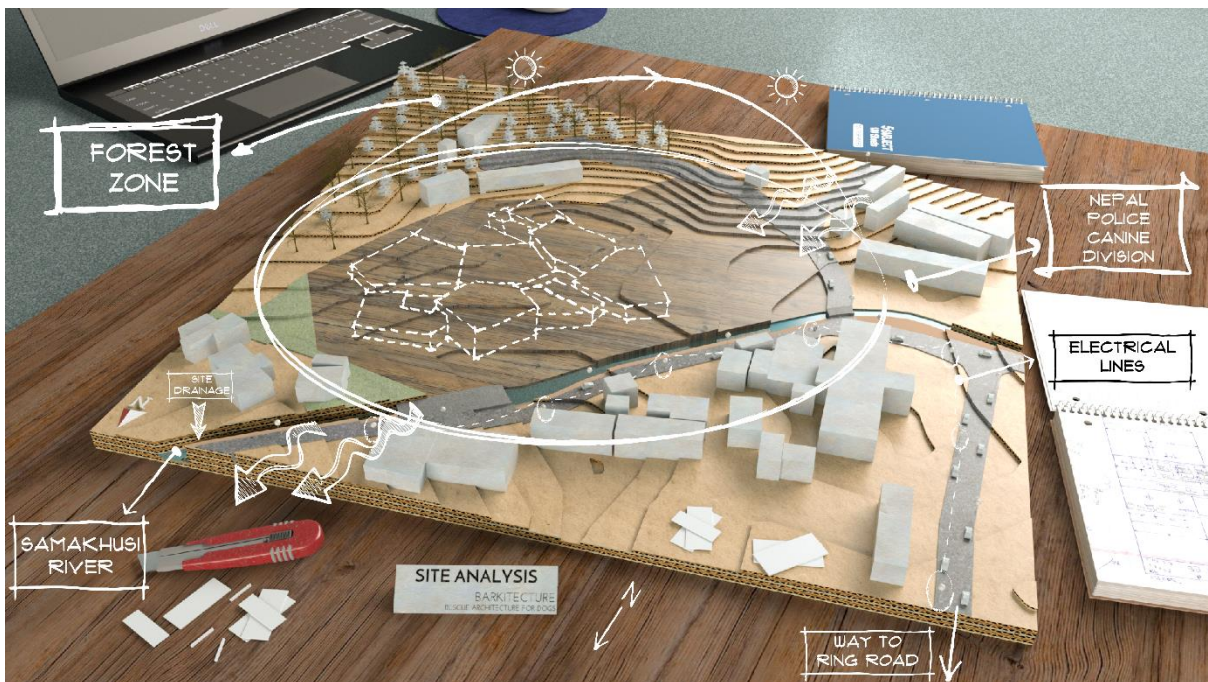


Figure 149: Site Analysis Maquette Diagram

4.12. SOWT Analysis

Table 15: SWOT Analysis

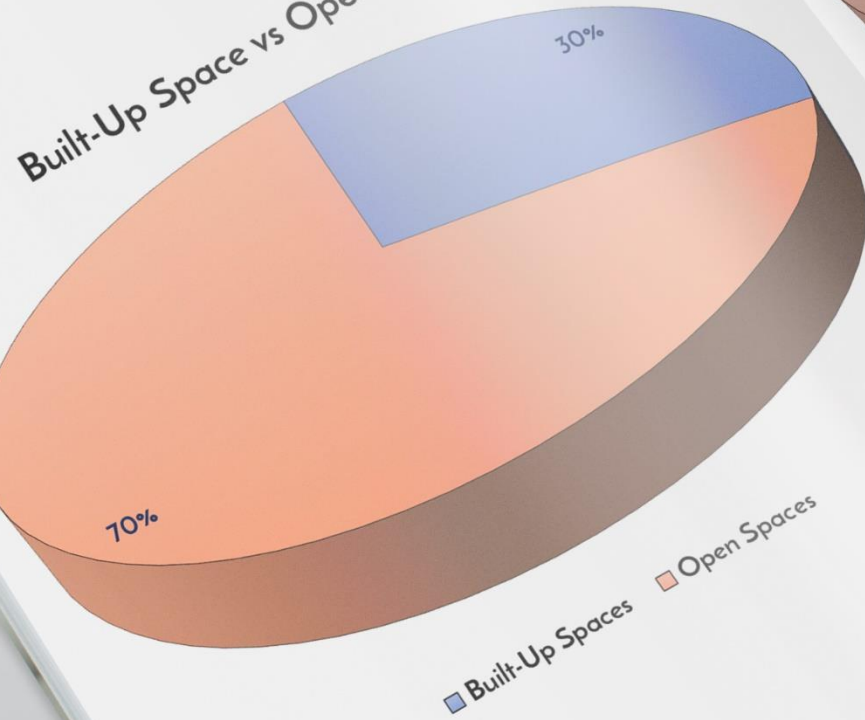
<p>Strength</p> <ul style="list-style-type: none"> • Having two roads along the boundary of the site allows for separate entries for served and service areas. • Open plot allows for better access of light and wind path • Proper infrastructure facilities • About 180m far from main road, good in reducing noise from the road 	<p>Weakness</p> <ul style="list-style-type: none"> • Soil might prove to be an issue as the area contains loose soil. • Width of road and lack of proper graveled roads • Several turns to reach to the site.
<p>Opportunity</p> <ul style="list-style-type: none"> • Potential Utilization of the Samakhusi River • Potential for Recreational Activities • Potential of Becoming Landmark 	<p>Threat</p> <ul style="list-style-type: none"> • The river can cause problems if neglected • The noise from the facility can cause problems with the neighbors

Source: Author

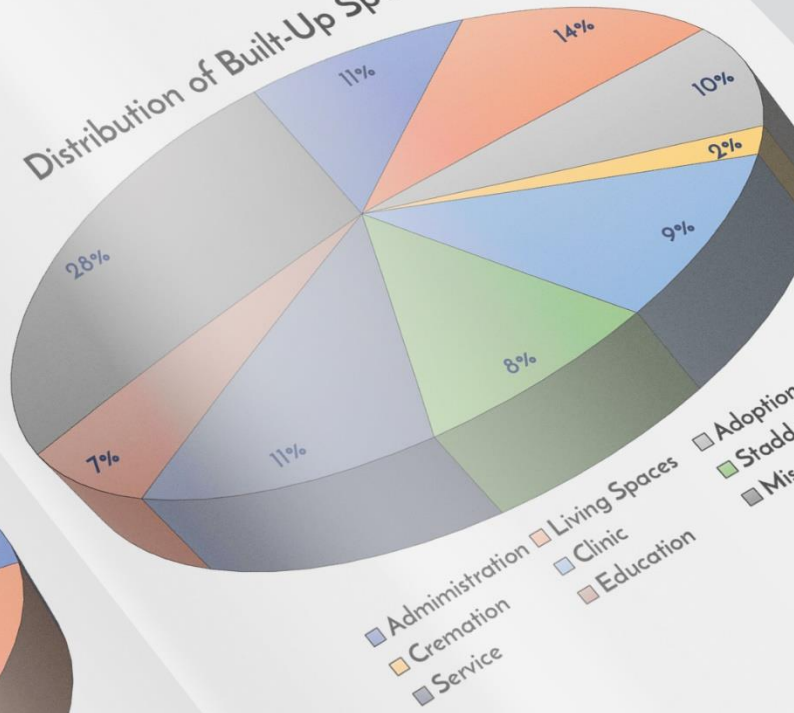
BARKITECTURE

RESCUE ARCHITECTURE FOR DOGS

Built-Up Space vs Open Space



Distribution of Built-Up Spaces



5.1. Overview

The spaces were divided into three major essentials as per the results of case study. Each space of spatial hierarchy is related to five freedom of animal welfare.

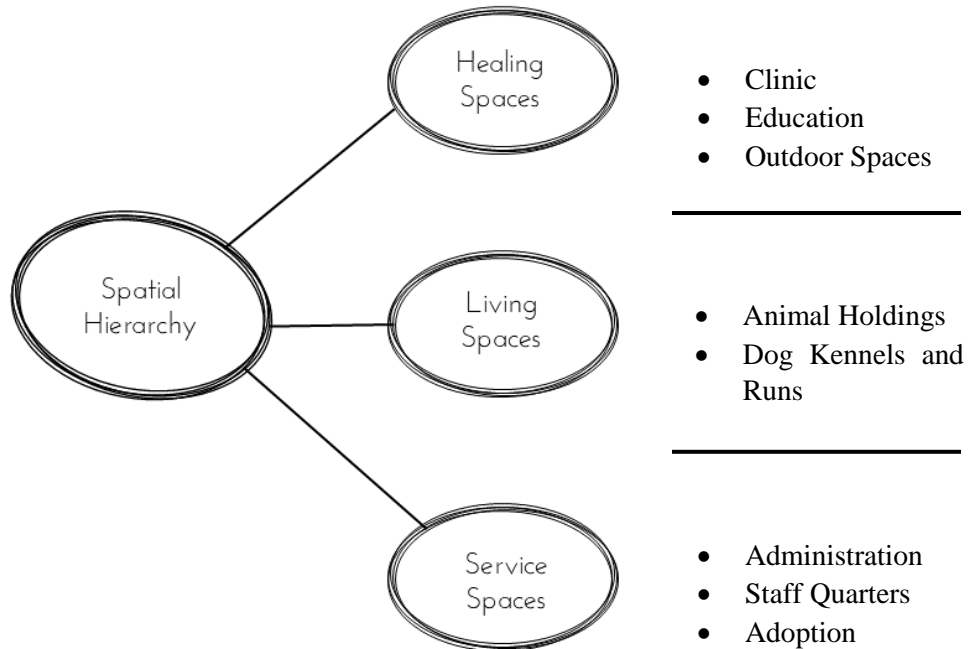


Figure 150: Spatial Hierarchy

5.2. Initial Program and Zoning

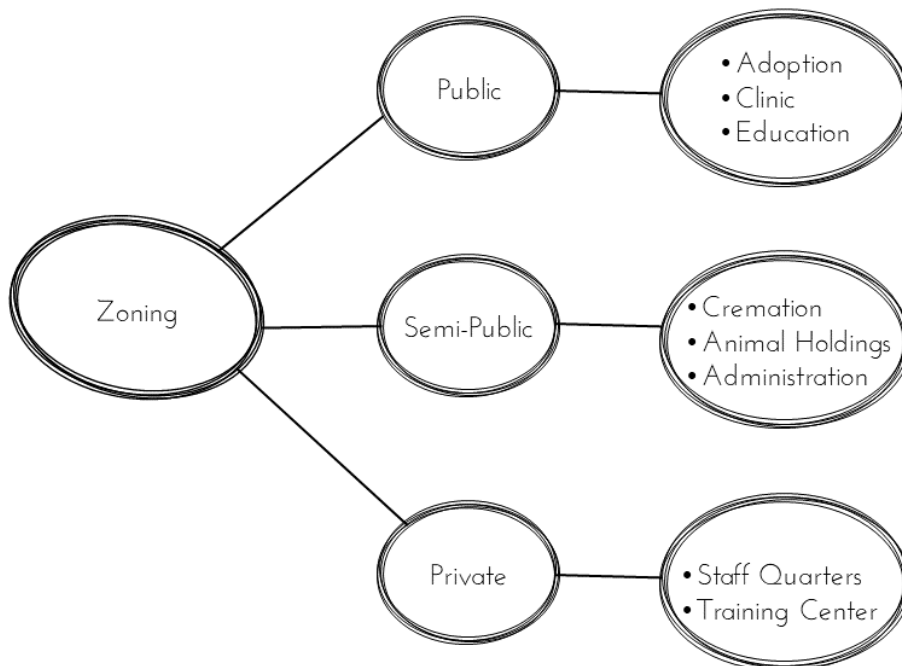


Figure 151: Initial Zoning

5.3. Calculation for Number of Dogs

From the Case Studies,

Table 16: Calculation of the Number of Dogs

S. No.	Animal Care Shelter	Number of Dogs
1.	Sneha's Care	167
2.	KAT Center	86
3.	SPCA Nepal	70
4.	Shree's Animal Rescue	200
5.	Animal Nepal	50

Here,

Average ratio of the number of dogs from the above data of national animal care shelters are 114.6. The total number of dogs in the shelter is taken to be 150.

5.4. Space Area Distribution

Table 17: Program Formulation

1. ADMINISTRATION

S. No.	Spaces	User No.	Unit Area (sq.m.)	Unit	Total Area (sq.m.)
1.	Reception	3	2.5	1	7.5
2.	Waiting Area	10	1.2	1	12
3.	Account Office	1	10	1	10
4.	Book Keeping	1	20	1	20
5.	Director Office	1	20	1	20
6.	Shelter Incharge	1	20	1	20
7.	Volunteer Spaces	5	12	1	60
8.	Health Technician Office	1	25	1	25
9.	Counselling Room	1	12	1	12
10.	Kennel Supervisor	1	10	1	10
11.	Staff Room	10	4	1	40
12..	Meeting Room	20	3.5	1	70
13.	Pantry	1	30	1	30
14.	W/C				
	Male	50		1	7.125
	- Urinal		0.75*0.9	2	
	- W/C		1.25*1	3	
	- Basin		0.75*0.9	3	
	Female	35		1	5.775
	- W/C		1.25*1	3	
	- Basin		0.75*0.9	3	
	Special Population	1	1.5*2.2	1	4
	Total				353.4

2. LIVING SPACES

S. No.	Spaces	User No.	Unit Area (sq.m.)	Unit	Total Area (sq.m.)
1.	Individual Dog Kennels				
	• Large	10	1.8*1.2	2	43.2
	• Medium	20	1.2*1.5	2	72
	• Small	20	1*1.2	2	48
2.	Dog Runs	10	3.5*3.5	5	61.25
3.	Dog Quarantine	10	1.8*1.2	1	21.6
4.	Dog Isolation	10	1.8*1.2	1	21.6
5.	Indoor Exercise Area	100	2	1	200
	Total				467.65

3. LANDSCAPE

S. No.	Spaces	User No.	Unit Area (sq.m.)	Unit	Total Area (sq.m.)
1.	Dog Park	-	350	1	350
2.	Training Ground	-	250	1	250
3.	Outdoor Runs	5	3.5*3.5	5	61.25
4.	Outdoor Kennels	20	1.8*1.2	1	43.2
	Total				704.45

4. ADOPTION

S. No.	Spaces	User No.	Unit Area (sq.m.)	Unit	Total Area (sq.m.)
1.	Adoption Lobby	-	3.5*6	1	21
2.	Interaction Courtyard	-	5*6	5	150
3.	Indoor Play Areas	-	120	1	120
4.	Interview Rooms	1	15	1	15
5.	Office	1	15	1	15
	Total				321

5. CREMATION

S. No.	Spaces	User No.	Unit Area (sq.m.)	Unit	Total Area (sq.m.)
1.	Euthanasia Room	1	20	1	20
2.	Mortuary	1	15	1	15
3.	Mourning Space	-	30	1	30
	Total				65

6. CLINIC

S. No.	Spaces	User No.	Unit Area (sq.m.)	Unit	Total Area (sq.m.)
1.	Reception	2	6	1	12
2.	Waiting Area	10	1.2	1	12
3.	Office	1	12	1	12
4.	In-Patient Boarding	10	3.5	1	35
5.	Examination Room	-	15	2	30
6.	Laundry	-	15	1	15
7.	Surgery	-	10	1	10
8.	Shower	5	6	1	30
9.	Grooming	5	6	1	30
10.	Pharmacy	-	25	1	25
11.	Cages and Wards	10	1*1.2	1	12
12.	X-Ray	-	25	1	25
13.	Intensive Care Unit	-	10	1	10
14.	Laboratory	1	35	1	35
	Total				305

7. STAFF QUARTERS

S. No.	Spaces	User No.	Unit Area (sq.m.)	Unit	Total Area (sq.m.)
1.	Helper Bedrooms	1	15	3	45
2.	Staff Kitchens	-	30	1	30
3.	Entertainment Spaces	-	50	1	50
4.	Break Room	-	15	1	15
5.	Store	-	10	1	10
6.	W/C	2	5	2	20
7.	Laundry	-	25	2	50
8.	Common Room	-	40	1	40
	Total				260

8. SERVICE

S. No.	Spaces	User No.	Unit Area (sq.m.)	Unit	Total Area (sq.m.)
1.	Kitchen	-	6*10	1	60
2.	Store	-	40	1	40
3.	Laundry	-	25	2	50
4.	Utility/Clean-Up Room	-	25	2	50
5.	Mechanical Rooms	-	25	1	25
6.	Backup Room	-	25	1	25
7.	Water Pump Room	-	25	1	25
	Total				375

9. PARKING

S. No.	Spaces	User No.	Unit Area (sq.m.)	Unit	Total Area (sq.m.)
1.	Service Parking	2	35	-	70
2.	Ambulance and Emergency Parking	2	25	-	50
3.	Guest Parking				
	Cars	25	15	-	375
	Bikes	50	2.5	-	125
	Total				620

10. EDUCATION

S. No.	Spaces	User No.	Unit Area (sq.m.)	Unit	Total Area (sq.m.)
1.	Community Education Rooms	-	20	2	40
2.	Multipurpose Hall	-	200	1	200
	Total				240

11. MISCELLANEOUS

S. No.	Spaces	User No.	Unit Area (sq.m.)	Unit	Total Area (sq.m.)
	Total B.U.A. without circulation and structure area	-	-	-	2387.05
1.	Circulation Area (25% of B.U.A.)	-	-	-	596.76
2.	Structure and Wall Area (15% of B.U.A.)	-	-	-	358.06
	Total B.U.A.				3341.87

5.5. Calculation of Site Area

Total Built-Up Area= 3,341.87 sq.m.

For the shelter, taking the Bye-Laws to be 30% of the total site area,

GCR= 30%

And,

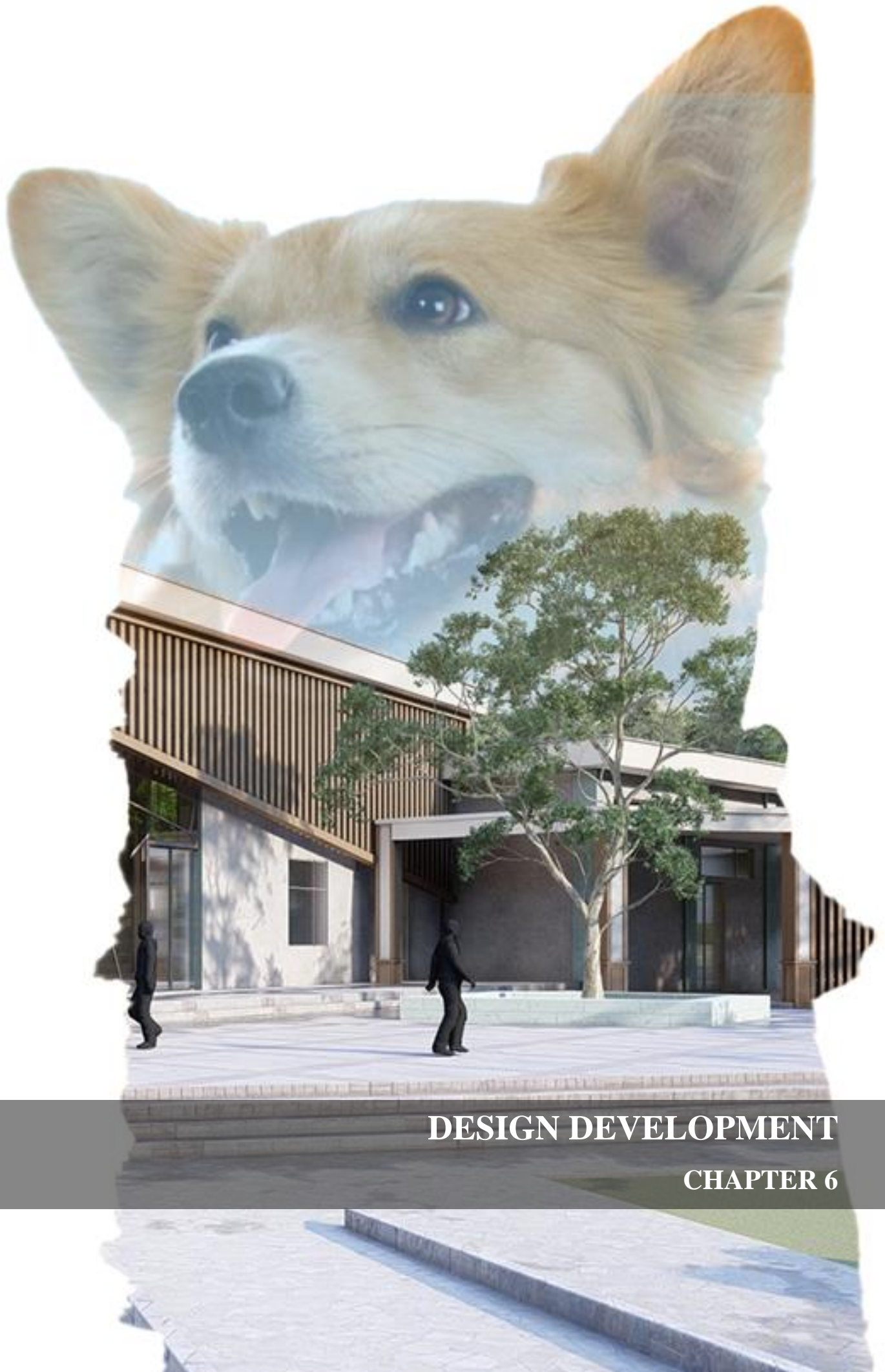
$$GCR = \frac{\text{Built-UP Area}}{\text{Total Site Area}} * 100$$

$$\text{or, } 30 = \frac{\text{Built-UP Area}}{\text{Total Site Area}} * 100$$

$$\text{or, Total Site Area} = \frac{3341.87 * 100}{30}$$

∴ Total Site Area= 11,139.57 sq.m.

= (21-14-2-1.51)



DESIGN DEVELOPMENT

CHAPTER 6

“Because we love animals and we think they deserve more attention.”

6.1. Concept

6.1.1. The Process

The primary intention of the design is to specify the adoption process of the street dogs’ life. The idea for it is to give the feel of the adoption journey of the dogs from their rescue to finding their home to the visitors. The life of the street dogs starts improving when they are rescued and are treated for the diseases. The dogs are then put through rehabilitation and are available for adoption. The dogs are then adopted and find their new family.

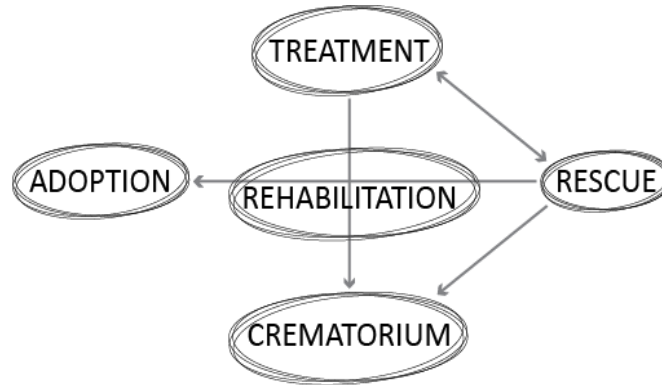


Figure 152: Dog Adoption Process

Source: Author

6.1.2. Internal Courtyards

From the literature review and case study, it was found that the circulation spaces around a central courtyard is feasible. The problem with creating a single central courtyard will lead to a boring, uneventful space with the same exact view from every space. Creating various pocket courtyards in various places will lead to various views and environments as the viewer roams to various parts of the building. Creating different pocket courtyards which imparts different moods for the guests and users is incorporated in the design. The internal courtyards also act as interaction spaces for the new family and the dogs whenever they come for adoption.

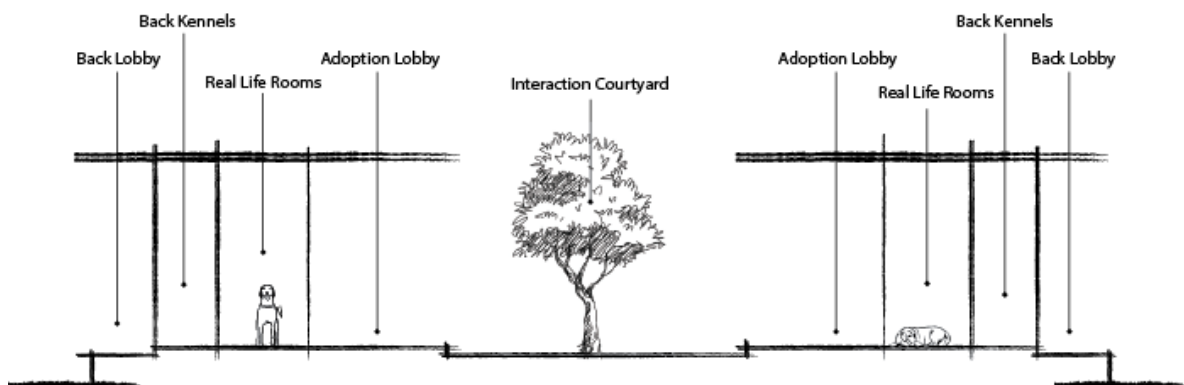


Figure 153: General Section Through Internal Courtyard

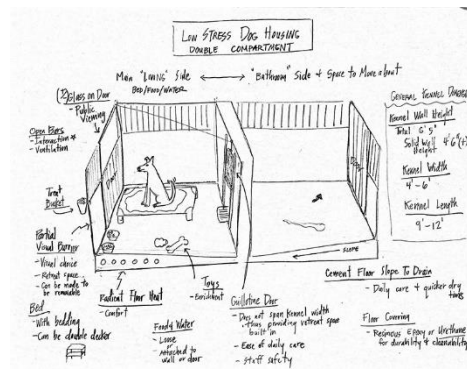
Source: Author

6.1.3. Kennel Types

From the case studies, it was found that using a single type of kennel is not feasible for various types of purposes. The real-life rooms are extravagant which should be used in adoption area where the dogs can be displayed properly attracting the visitors and keeps them engaged with the dogs. The real-life rooms however, require more space than required. Thus, they are not suitable for general holdings. Thus, double compartment kennels are feasible for the holdings which are built on standard sizes and are feasible for dogs. The behavior of dogs into account, some dogs prefer to live in groups with other dogs as well. Thus, group housing for the dogs called dog runs are also required for the shelter. Thus, all three types of housing kennels are provided in the design.



Real-Life Room



Double Compartment
Kennels



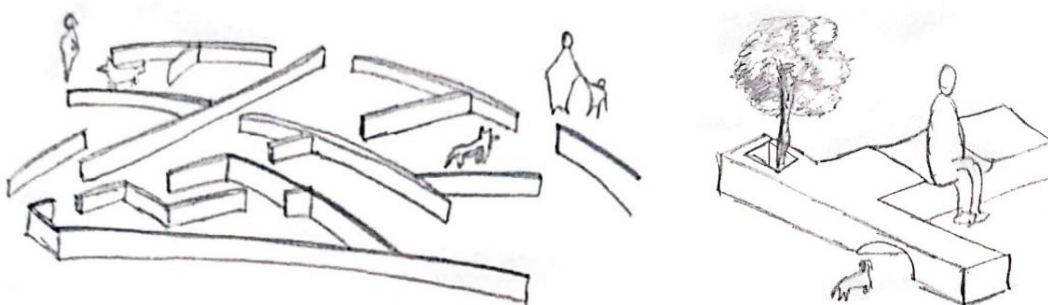
Dog Runs

Figure 154: Types of Kennels

Source: Author

6.1.4. Landscape

The seating and the props for the landscape and the dog parks are created such that they are comfortable for both the dogs and the owners and visitors. Integrating punctures in the walls, dog mazes, training props in the landscape allows the dogs to be engaged with the props and the park. The following are some of the benches that can be used for the landscape which can be used by both the dogs and the visitors.



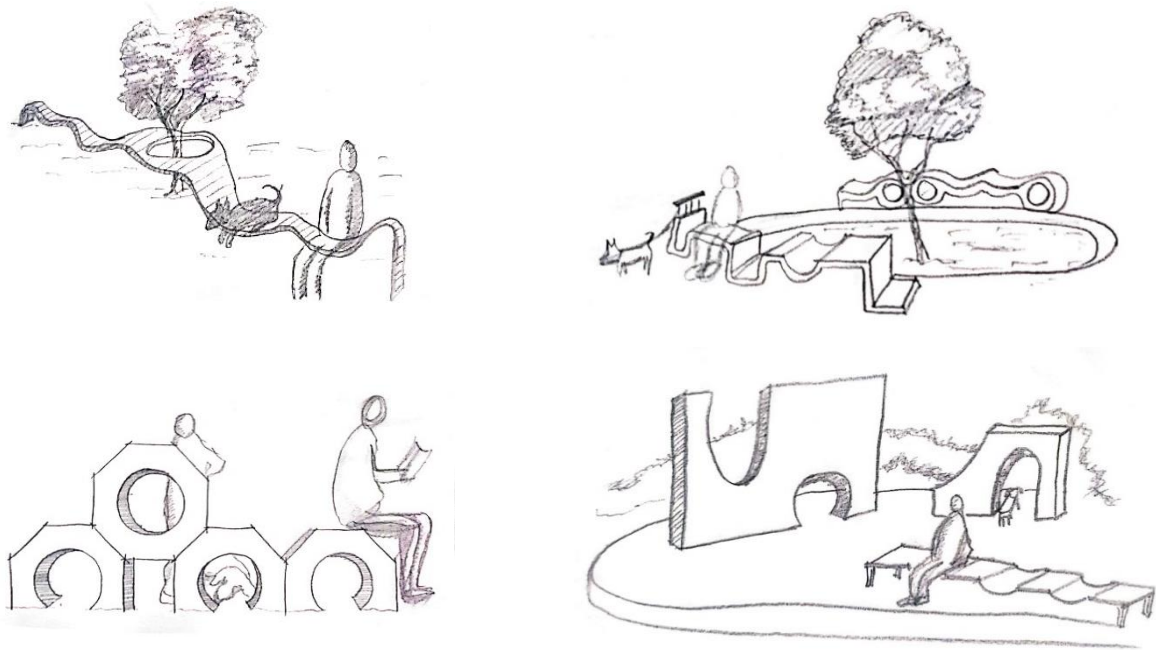


Figure 155: Landscape for Dogs

Source: Author

6.1.5. Dog Friendly Design

The proposed animal shelter stands as a transition in designing a typical animal shelter. This is a built environment where hundreds of home-less animals get a chance to live their life in significant correlation with well-being and health. It showcases a design which is both practical and beautiful redefining the essence of typical shelters as unfriendly impoundments. It provides spaces that uplifts both human and animal experiences because after all we are the ones who are responsible to ensure their well-being. Old stereotypes define animal shelters as dirty barns and ugly cages where no one would care to visit. These shortcomings have been redefined here making it a place where people and dogs would love to spend time in.



Figure 156: Landscape and Parks Integrated in Dog Shelters

Source: Author

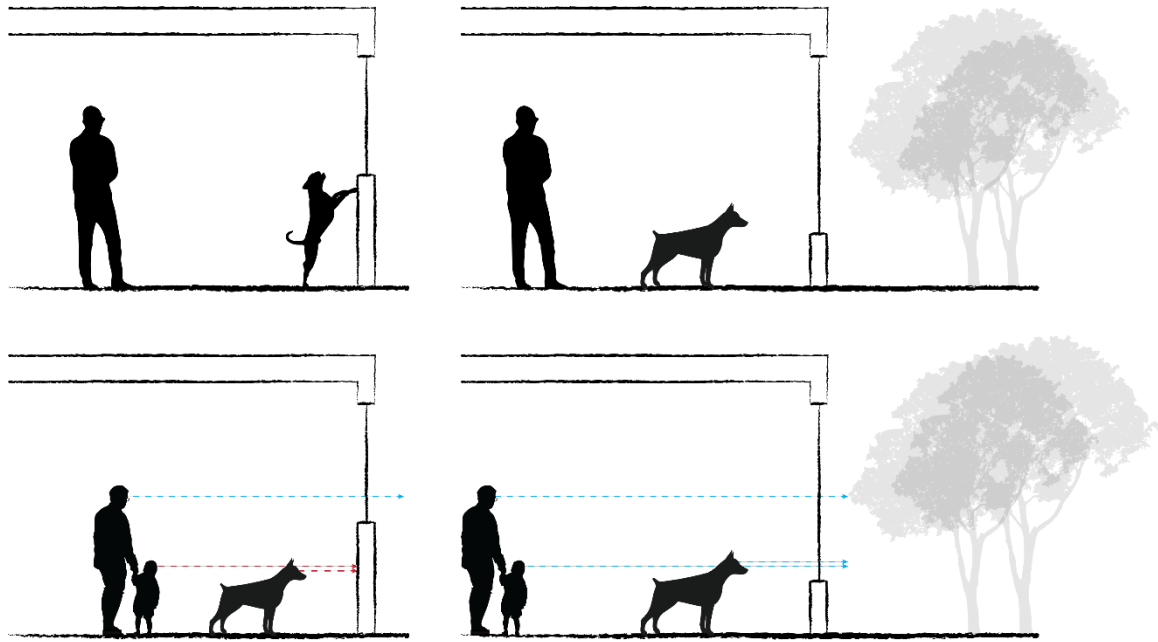


Figure 157: Typical Animal Shelter versus Proposed Animal Shelter

Source: Author

6.2. Site Considerations

The planning for the proposed site dwells upon a contextual approach, where the architecture can be experienced both from inside and outside. The placement on the site has been determined by a series of alterations between aesthetic, topographical and environmental conditions.

1. Segregation of Vehicles and Pedestrians

Segregation of the vehicular activity from the pedestrian activities to make the facility more walkable, convenient, accessible and people friendly. It also provides ideal solution for traffic congestion and unobstructed flow of pedestrians and vehicles.

2. Access and Accessibility

Consideration to factors such as accessibility and service areas has been given when developing the master plan. The 8 m road in the west is considered to be the major approach road. A 6 m road also extends through north west edge of the site which is facilitated through the service entry.



Figure 158: Possible Entry Points to the Site

3. Segregation of Noisy and Less Noisy Areas

The functional zoning in the site is based on the noise levels created from the facility. From literature review the noise threshold comes to be around 100 dB from inside the shelter. Thus, the noisy area is kept on the edge close to the forest area such that the trees can act as a noise buffer. The dog holdings are kept far from the road so as to prevent disturbance to the dogs from the traffic noise.



6.3. Flow and Adjacency

The general adjacency of spaces for the various functions in the shelter shows the space that require immediate and indirect connection among the spaces. The flow and adjacency matrix for the shelter can be obtained from the following table.

Adjancies	Lobby	Consult Rooms	Adoption Rooms	Rehab Areas	Animal Holding	Food Storage	Laundry	Mechanical Room	Support Staff	Break Room	Volunteer Room	Training Room
Lobby		●	●	○	○				○	○	○	○
Consult Rooms	●		●						○			
Adoption Rooms	●	●		○	○				○			
Rehab Areas	○	○	○		○				○			●
Animal Holding	○		○	○		●	●	○		○	○	●
Food Storage					●		○	○	○			○
Laundry					○	○		○	●	○	●	
Mechanical Room					○	○	○					
Support Staff	○	○	○	○		○	●			●	●	○
Break Room	○				○		○		●		●	○
Volunteer Room	○				○		●		●	●		●
Training Room	○			●	●	○			○	○	●	

● Immediate Access
○ Indirect Access

Figure 159: Animal Shelter Adjacency Matrix

Source: Shakya. 2018

6.4. Functional Zoning

At a functional level, the site is divided into 8 parts: administration, park, training, clinic, cremation, staff, service, holdings. With an emphasis on pedestrian access, vehicular access and service access, three entrances are given in the facility which is supported from the case studies. The functional zoning is done on the basis of the surrounding areas and spots causing minimal noise problems caused due to the site.



Figure 160: Site Zoning

Source: Author



Figure 161: Division of Spaces

Source: Author

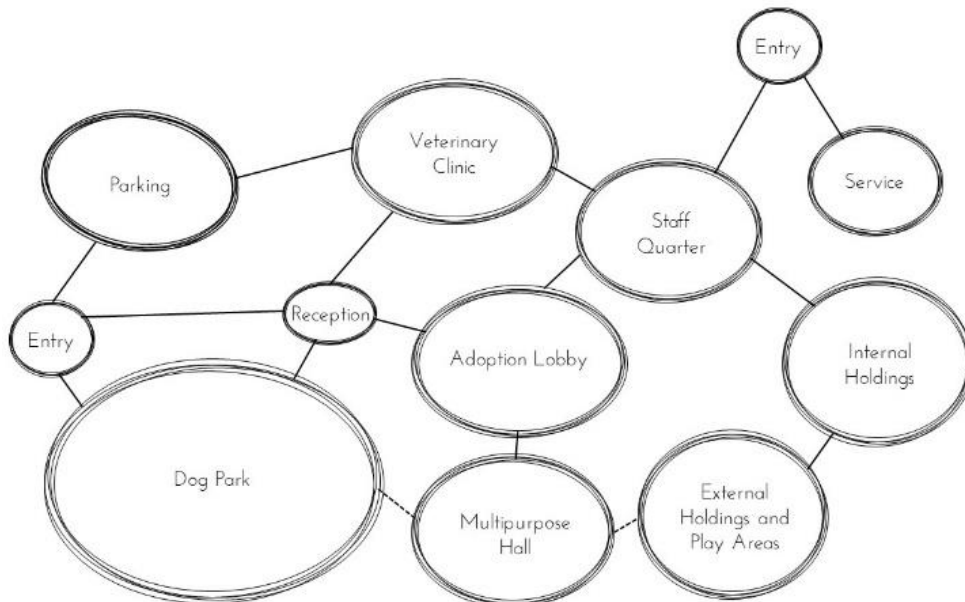


Figure 162: General Flow Bubble Diagram

Source: Author



Figure 163: Individual Block Bubble Diagram

Source: Author

6.5. Design

Phase 1: The Beginning

The basic concept of the design started with the general shape of a dog kennel, a home for the dogs. Looking at the basic shape of a general kennel, a shape of pentagon can be interpreted. Also, the number 5 is associated with the five freedoms and the five animal needs that must be respected in the design of an animal shelter. Thus, the beginning shape of the design started with a pentagon. The tiling of regular pentagons was done in order to create an interesting shape and such that each shape can be divided in accordance with the zoning. The individual pentagons are tiled according to the zoning mentioned above. The negative spaces created could be used as landscape.

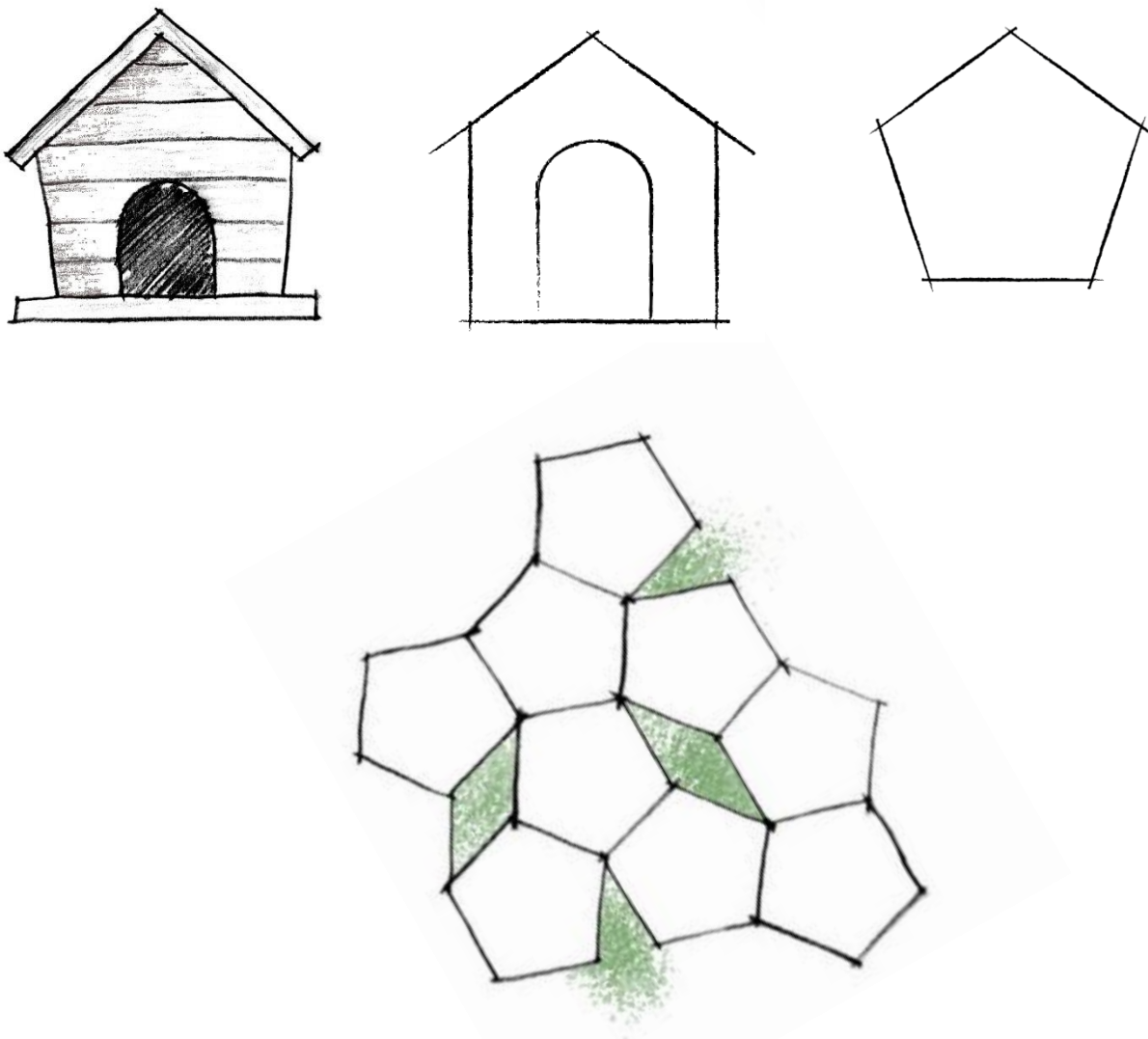


Figure 164: Concept Phase 1

Source: Author

Phase 2: Giving Form

The plan formation from the previous tiling created rigid shape and created a lot of negative spaces. For the further phase of the design, to eliminate the problems created from the first phase, the perception of the texture of a dog's nose was taken. The texture resembled the tiling of a pentagon in an organic shape. The texture is the main inspiration for this phase of the design. The organic tiling of irregular pentagons gave a flexible shape which created a certain flow and easier accommodation of the functions with much less compromises. Thus, the following shape was finalized for the plan.

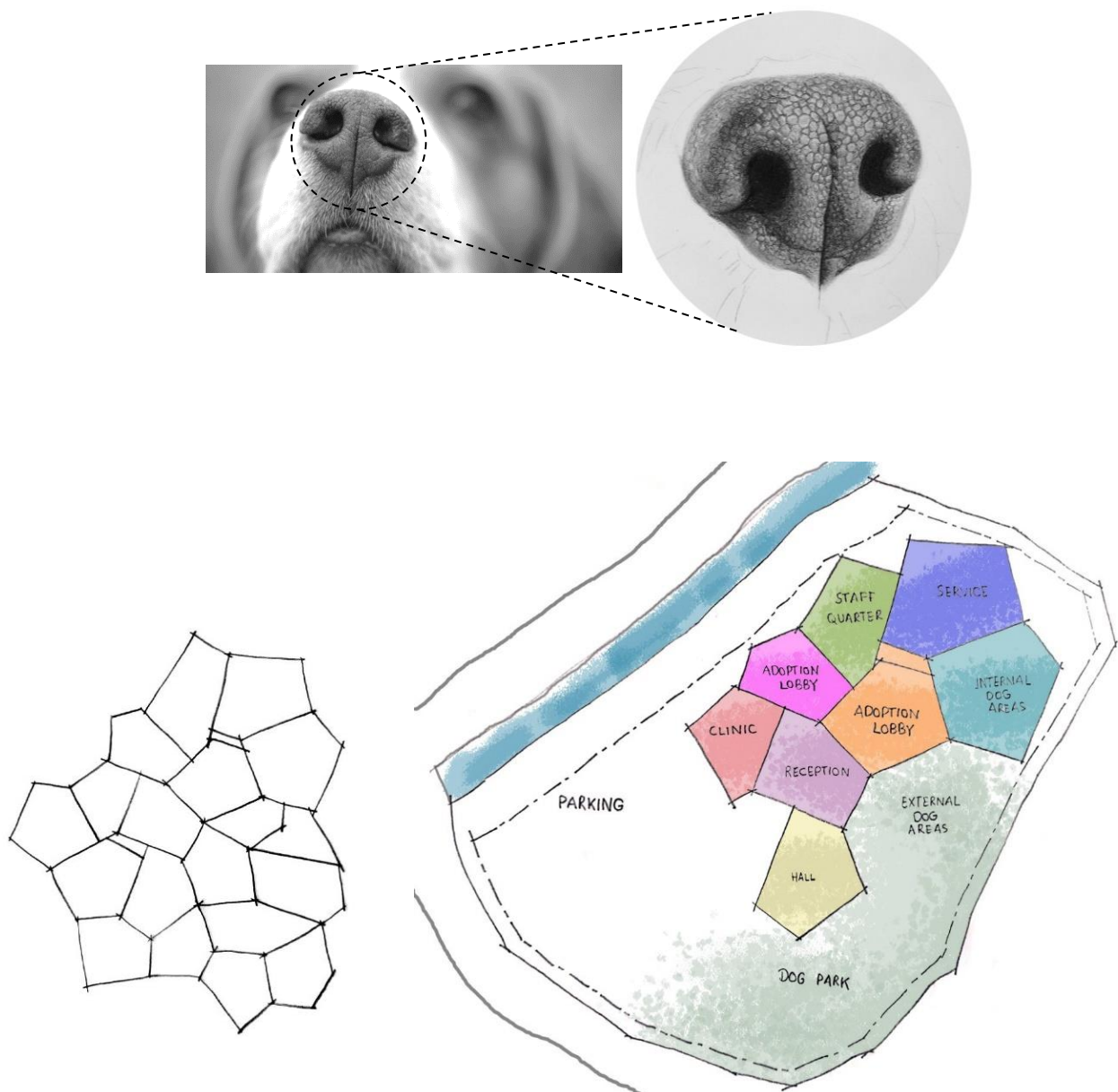


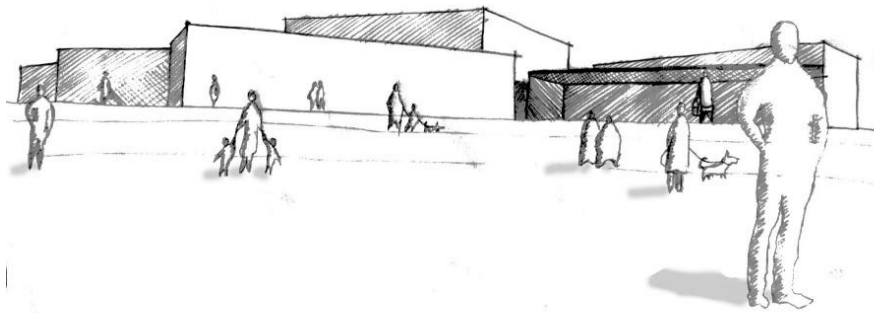
Figure 165: Concept Phase 2

Source: Author

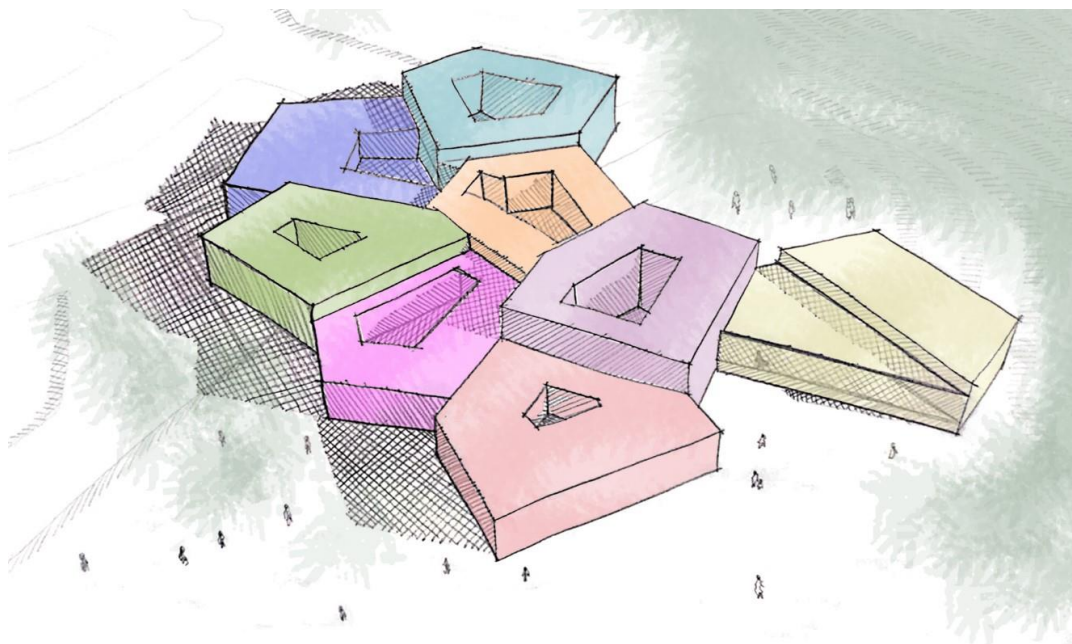
6.6. Form Development

The general form of the building shows the variation in the levels of the blocks itself. The variation in the height of the roofs of different blocks. The variation in the roof elevation creates an interesting and dynamic form complementing the contours behind the site itself and also the

It also complements the surrounding of the building. The contemporary architecture of the surroundings is complemented by the flat roof in the building. The non-perpendicular nature of the plan is also complemented by the flat roof. The courtyards area covered by triangular glass frame. The form also created extravagant spaces in the interior will welcoming feel.



Normal Eye View



Bird's Eye View

Figure 166: Form Development

Source: Author

6.7. Architectural Expression

The exterior of the design features a modern architecture. The fenestration of the building shows the combination of raw materials which highlights the materials used in the building. Use of louvers on the facades and triangular glass roofs creates diffused light in the interior and controls the harsh lighting that might cause problems for the dogs and also, protects the internal spaces from weather.

The interior of the design is done in industrial architectural style. Using the industrial style will highlight the subject and will also enhance the nature of materials used in the design. The color palette in the particular style is also feasible for the project creating a calm and pleasing interior.

6.8. Plan Formation

The plan for the facility is inspired from the arrangement of a series of pentagons. There are three entrances to the facility; for pedestrians, for vehicles and for service and maintenance purposes. The built structure is a one storey building going two floors on few spaces only. Most of the built of spaces of the facility is moved to the north (further from the main entry) of the site. The main intension of the decision is to maximize the frontal area which can be used commercially. It can be used to sustain the facility through parking and the dog parks. The dog park is a public space where all the general public can enter into the facility with their dogs. A

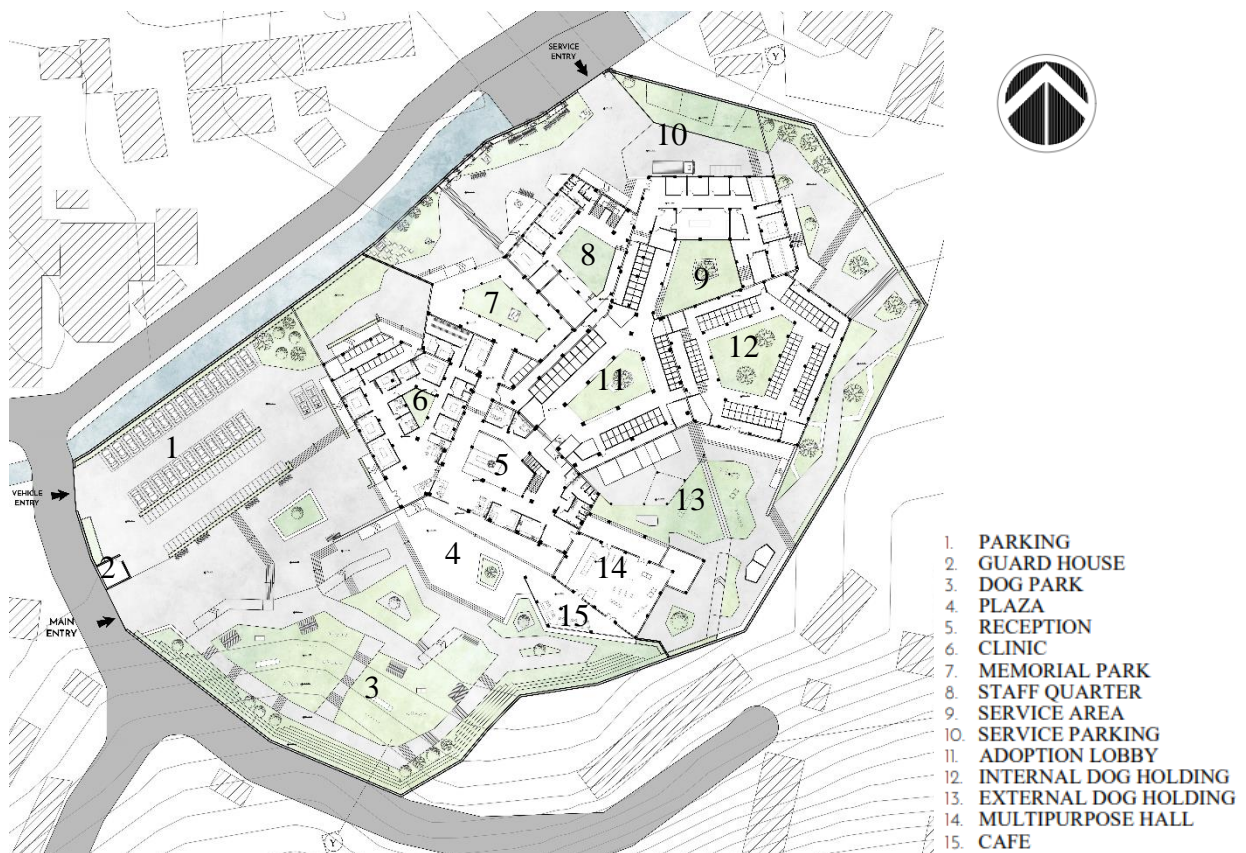


Figure 167: Master Plan

Source: Author

small café is given in close distance to the park. the parking can hold a space for 25 cars, 50 bikes and 2 ambulances.

The plan of the block is arranged on the basis of circulation around a central courtyard. Separate courtyards are given for different blocks to reduce the resulting huge mass. The spaces are arranged such that the flow for the visitors, staffs and the dogs are different and are arranged such that they are clearly directed to the designated spaces. The built space is divided into various blocks according to its functions.



Figure 168: Bird's Eye View



Figure 169: View from Entry

1. Administration Block

The administration block has a warm welcoming space with a central courtyard and waiting space. The administration block is of two storey where the space is divided such that the disturbance from the circulation on the ground floor is separated from the first floor.

The entry to the block is greeted by a reception and a waiting area. The central courtyard of the block is more of an atrium space that gives a serene feel to the block. The ground floor consists of the block had a pet item shop, pantry washrooms and interview rooms and the upper floor consists of the personnel offices and the meeting rooms and accountant office.

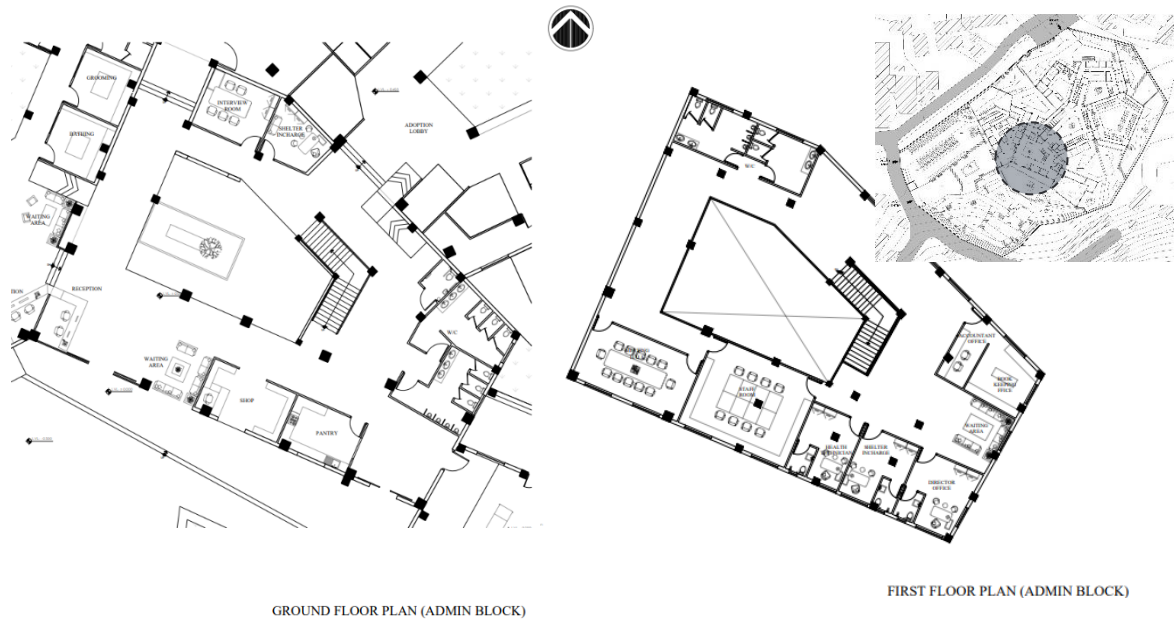


Figure 170: Administration Block

The lobby circulated around the atrium then leads to various blocks; Clinic block, Memorial Block, Adoption Block and Multipurpose Hall.



Figure 171: Reception Area



Figure 172: Reception Courtyard

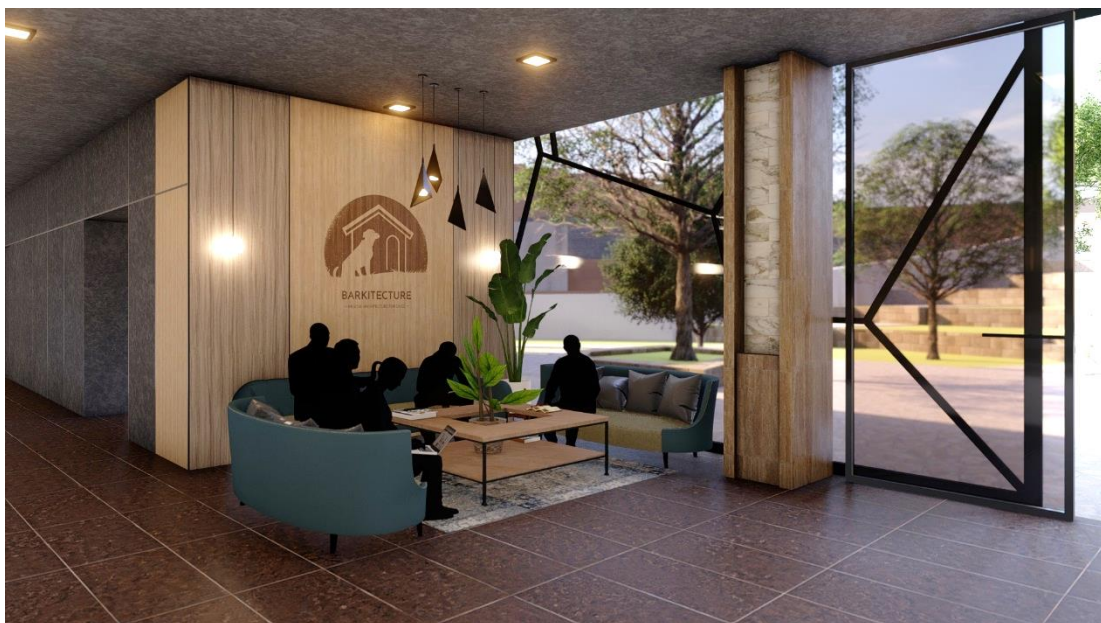


Figure 173: Waiting Area

2. Clinic Block

The clinic block can be accessed from the main entry as well as from the administration block. It consists of a small open courtyard. The clinic block contains spaces for treatment, housing and living. The entry for the block is also greeted by a reception and a waiting space. The lobby leads to examination rooms, doctor's offices and the x-ray rooms. Spaces like surgery rooms, ICU and wet labs are isolated and are kept separated from the visitors. The clinic blocks also has a bathing and grooming space for the dogs. The lobby also leads to the holdings for the newly brought dogs which are kept in the isolation cages and the

quarantine cages. The block also leads to an open space where the new dogs can play and roam. The block leads to administration block and the memorial block.

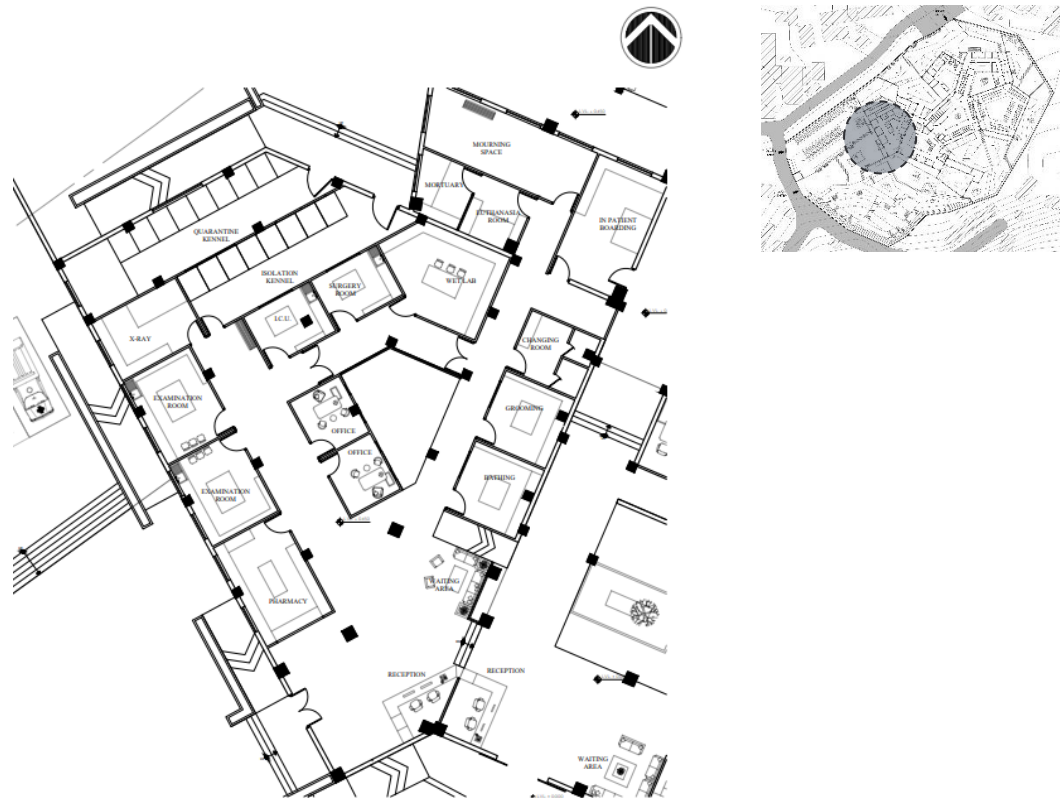


Figure 174: Clinic Block



Figure 175: Clinic Reception Area

3. Memorial Block

The memorial block consists of a space for euthanasia room, mortuary and a mourning space. The space also leads to a memorial park which is dedicated to the memory for the deceased dogs. The park also consists of memorial wall where the special memories of the dogs and owners can be placed. A memorial stone where the name of the deceased dogs are engraved is also placed in the memorial park. The visitors then are exited through the service entry, not disturbing the flow inside the building.

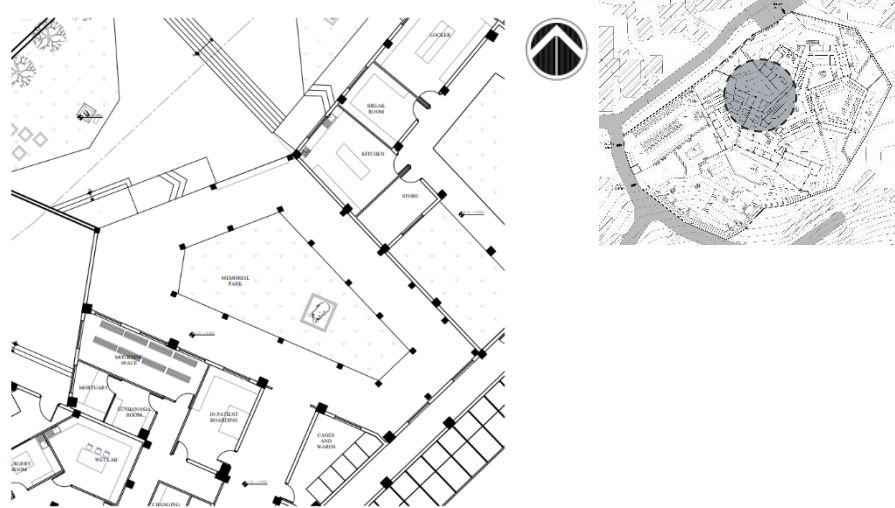


Figure 176: Memorial Block

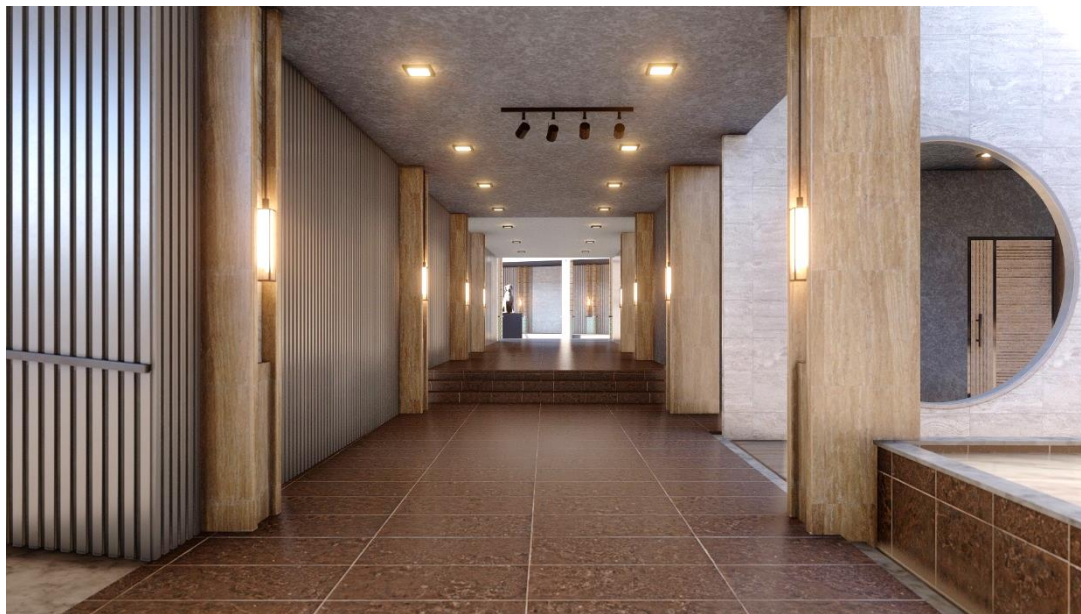


Figure 177: Entry to Memorial Park



Figure 178: Memorial Park

4. Multipurpose Hall

The multipurpose hall is mostly used as an indoor training area for the dogs. But, it can be used as conference hall and education rooms during events. It can also be used for various programs and dog talent shows. The hall can be entered through the external holding, the entry plaza and the administration block. There is also a storage space for the equipments and the furnitures.

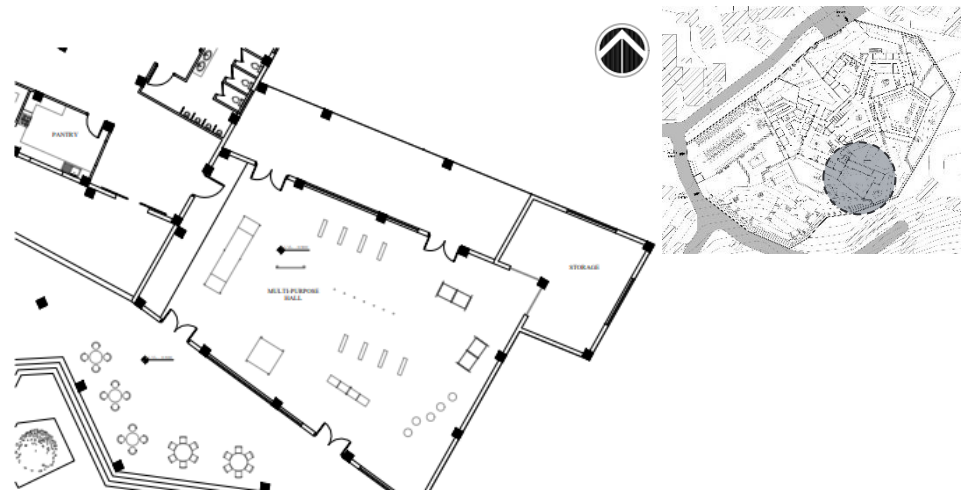


Figure 179: Multipurpose Hall



Figure 180: Hall Layout



Figure 181: Indoor Training Layout

5. Holding Block

The holding block for the dog houses a space for 65 individual kennel and 4 group holdings capable of holding 40 dogs. There is central courtyard in the block where the dogs can roam. The holding cage can be entered through the service block and the adoption block. The block leads to an outdoor play area for the dogs which is designated for the dogs of the shelter only. External holdings are also present in the outdoor play area. The holding also connects to service block for easy cleaning access.

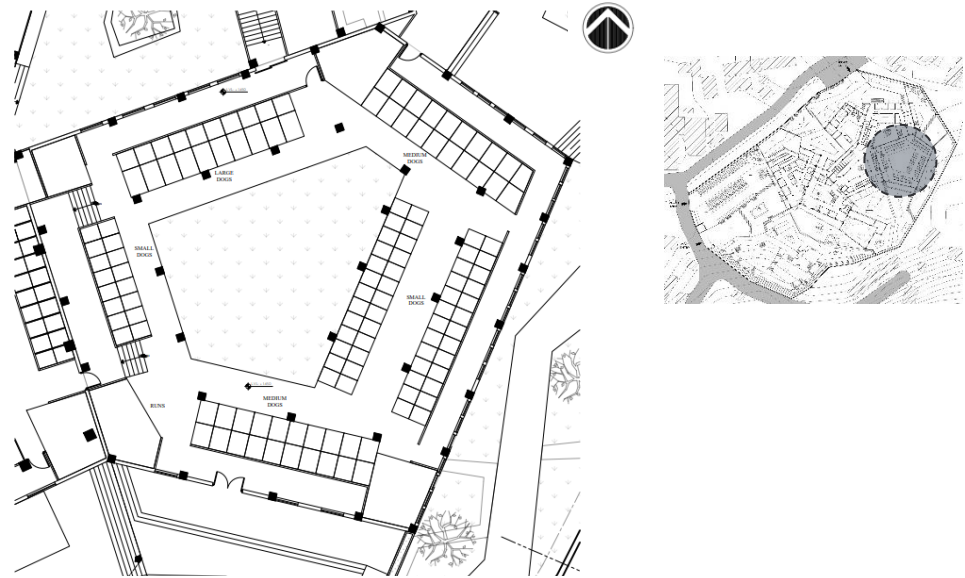


Figure 182: Holding Block



Figure 183: Holding Courtyard



Figure 186: Second Courtyard for Adoption Block

7. Staff Quarter

The staff block is also a two storey block which houses space for the volunteers and the caretakers of the shelter. The staff quarter can be accessed through the service block and the adoption block so that the volunteers can easily circulate to the holdings. There is a separate kitchen and store is provided for the volunteers and staffs along with a break room and entertainment room. From the case study, one staff can handle about 50 dogs, so, three bedrooms are provided for the staffs which are located in the upper floor.

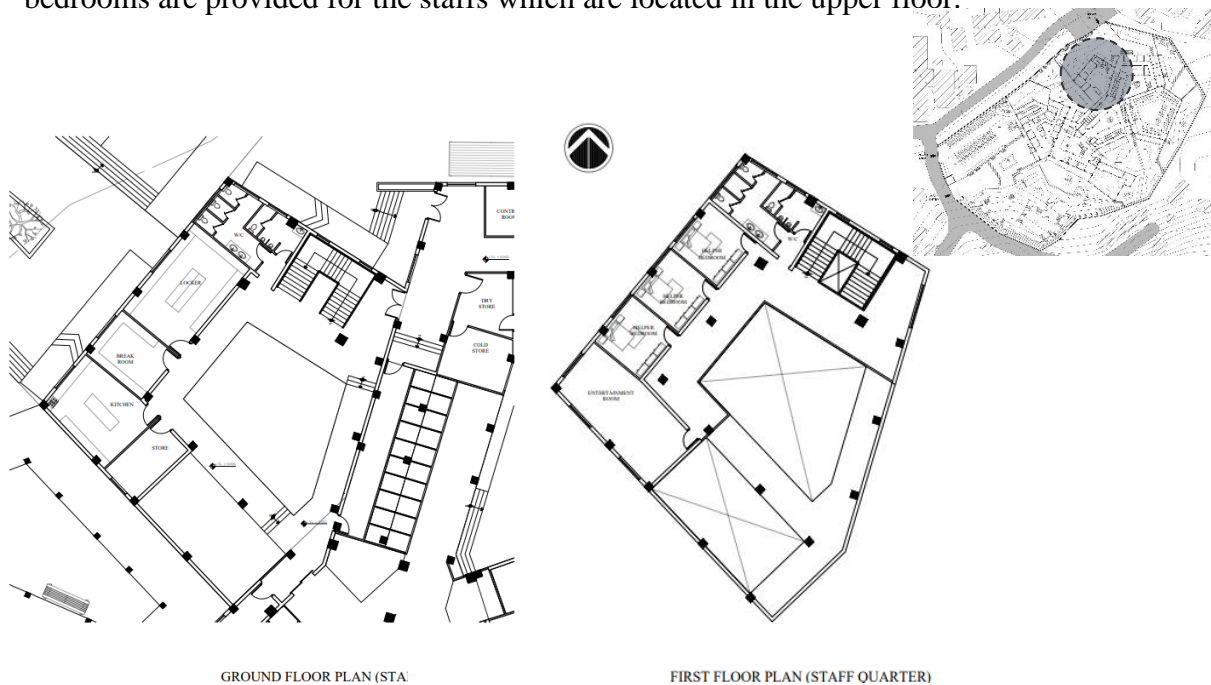


Figure 187: Staff Quarter



Figure 188: Staff Quarter Courtyard

8. Service Block

The service block contains spaces for equipments as well as the kitchen and the store for the shelter dogs and also the space for bathing and grooming of the shelter dogs. The block can be entered from the service entry and the space is connected to an outdoor open space which leads to the external holdings and the internal holdings.

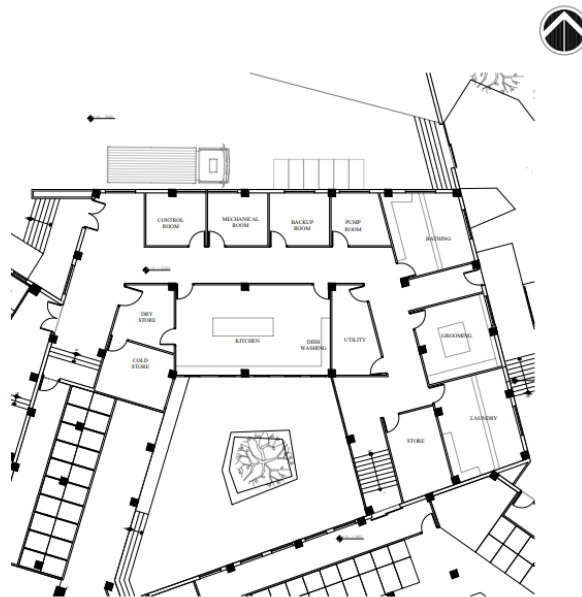


Figure 189: Service Block

9. Landscaping

a. Dog Park

The facility offers a dog park placed close to the entrance of the site. The dog park is spread across a contour difference of 5m. The dog park can be used commercially and can be used for the sustenance of the dog shelter. The dog park provides a circulation track for the visitors and the dogs alike. Stone paving is used for the track. Interactive seating which can be used by both the dogs and the human is placed in the park. dog training and playing equipments are also placed the park.



Figure 190: Dog Park



Figure 191: External Holding

b. External Holding for Dogs

The external holding for the dog is exclusively for the dog belonging to the shelter only. The area runs all the way to the back of the site. The facility contains external dog runs and semi-open spaces for the dogs. The external holding is also in close proximity to the forest such that the trees acts as a natural buffer to the noise from the dogs and also provides a calm and peaceful environment for the dogs. This area is isolated from the dog park and other landscaping zone. This area has a maximum contour difference of 3m.



Figure 192: External Holding Connecting to Service Block



Figure 193: Doggie Airlock

6.9. Physical Model



Bird's Eye View



Front View



Main Entrance



External Dog Holding



External Dog Holding and Service Area



Service Entry and Memorial Park

Figure 194: Physical Model

6.10. Structure and Materials

6.10.1. Structure

As per the nature and requirement of the project, the structure of the building is of monumental scale giving an iconic expression to the existing urban context. The building plans are a result of a combination of irregular pentagons, and there is inclusion of various courtyard spaces, so the resulting grid system that creates an interesting layout. The building structure of constructed out of R.C.C. The use of R.C.C. creates a rustic feel which goes on with the concept of the building.

The grid span ranges from 2.9 m to 8.2 m, further divided by secondary beams. The grade of the concrete used is M25. Square RCC columns of varying sizes; 300x300, 450x450 and 600x600 are used. The beam depth used ranges from 450mm to 750mm. The foundation footing used is isolated footing. RCC flat slab is used for the roof structure. Concrete waffle slab is used for the multipurpose hall where a large span is required. To protect the interior from weather effects, glass roof with aluminum frame arranges in triangular lattice pattern is used. Steel truss is also used in the adoption lobby where it created an interesting false ceiling pattern.

6.10.2. Materials

The primary building material used for the construction is Reinforced Cement Concrete and Bricks. However, the walls are also made up of Autoclaved Aerated Concrete (AAC) blocks. The AAC blocks are used in the areas where sound insulation is required to prevent the noise of dog barks. AAC blocks are used in required spaces only to reduce the overall cost of the building. The exterior of the building is a combination of exposed polished concrete and exposed brick components. Use of wooden louvers and brick jali. The glass panels used in the project are normal panel glass in the administrative, staff and service areas. However, high strength sound proof glass is used for the high noise areas and the triangular glass roof to prevent excess noise and prevention from shattering from the dogs.

The materials for the interior are also exposed polished concrete and plaster and paint with muted color palettes to avoid vibrant colors that might be uncomfortable for the dogs. Extra coats of non-toxic, durable polish were applied for durability to withstand the abuse by the dogs. A defined direction when designing spaces for exhibitions, is the minimalistic approach that stresses the importance of keeping the materiality of spaces simplistic so that the subject is the main attraction. The proposed solution dwells on this approach in terms of materiality, however it doesn't reduce architecture as a secondary element, but uses it to enhance the subject.

6.11. Building Services

6.11.1. Electricity

Electrical lines are supplied from the NEA electrical lines that runs through the 6m road. Three phase connection is taken from the lines leading to the distribution board in the facility.

6.11.2. Water supply

Source

Apart from the Nepal Water Supply Corporation, underground water is the main source of drinking water for the whole project. The underground water will be extracted from the method of boring.

Quantity of Water

The quantity of the water tank capacity is done based on water requirement as guided by NBC-208.

Calculation of water consumption

1. SHELTER

S. No.	Description	Number	Overhead (l/d)	Total
1.	Animal Consumption			
	Puppy	30	0.5	15
	Adult	120	2	240
2.	Grooming/ Washing			
	Puppy	30	5	150
	Adult	120	20	2400
3.	Trench Cleaning (Excreta Cleaning)			
	Puppy	30	5	150
	Adult	120	15	1800
	Total			4755

2. SERVICE

S. No.	Description	Number	Overhead (l/d)	Total
1.	Veterinary Clinic			
	User	25	40	1000
	Dogs	20	30	600
2.	Administration	25	40	1000
3.	Other Volunteers	10	40	400
	Total			3000

3. STAFF QUARTER

S. No.	Description	Number	Overhead (l/d)	Total
	Staff Quarter	20	140	2800
	Total			2800

Calculation of Tank Size:

$$\begin{aligned}\text{Total water consumption per day} &= 4755+3000+2800 \\ &= 10555 \text{ liters} \\ &= 10.555 \text{ cu. m.}\end{aligned}$$

$$\begin{aligned}\text{Size of water tank} &= 10.555 \times 3 \\ &= 31.7 \text{ cu. m.}\end{aligned}$$

$$\text{Fire tank} = 50 \text{ cu. m. (NBC)}$$

$$\begin{aligned}\text{Total size of underground tank} &= 50+31.7 \\ &= 81.7 \text{ cu. m.}\end{aligned}$$

$$\text{Total size of overhead tank} = 40 \text{ cu. m.}$$

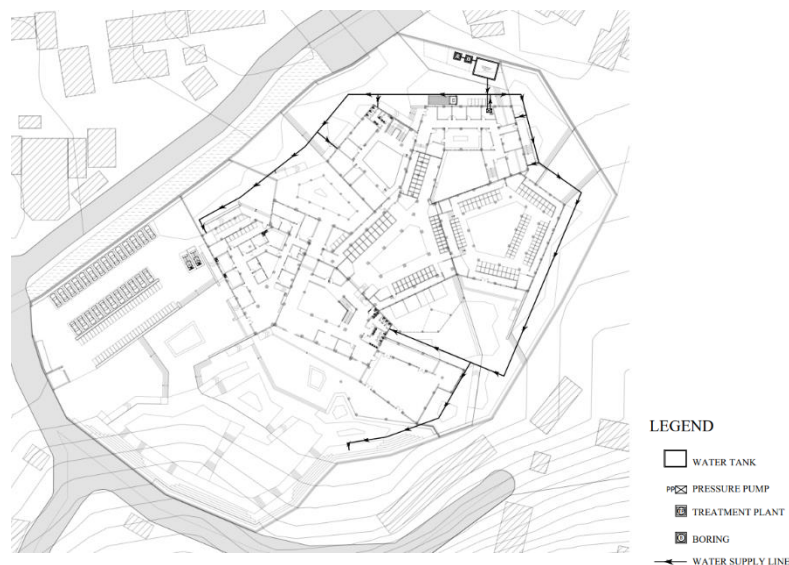


Figure 195: Water Supply Layout

6.11.1. Sanitation

STP (Sewerage Treatment Plan) is proposed for environment friendly management of sewerage as the wastewater that leaves the treatment plant a lot cleaner than the septic tank and can be directly discharged into the local watercourse.

$$\text{Total no. of users} = 150$$

$$\text{Total volume of septic tank} = 150 \times 3$$

$$\text{Volume} = 450 \text{ cu. ft.}$$

$$= 12.7 \text{ cu. m.}$$

$$\text{Taking } 15 \text{ cu. m.}$$

$$\text{Taking } H = 1.5\text{m then, } B = 2.5\text{m and } L = 4\text{m}$$

For the calculation of Soak Pits,

Size of Soak Pit= 3x SP-6 (D=5m, H=2.75m) from standard

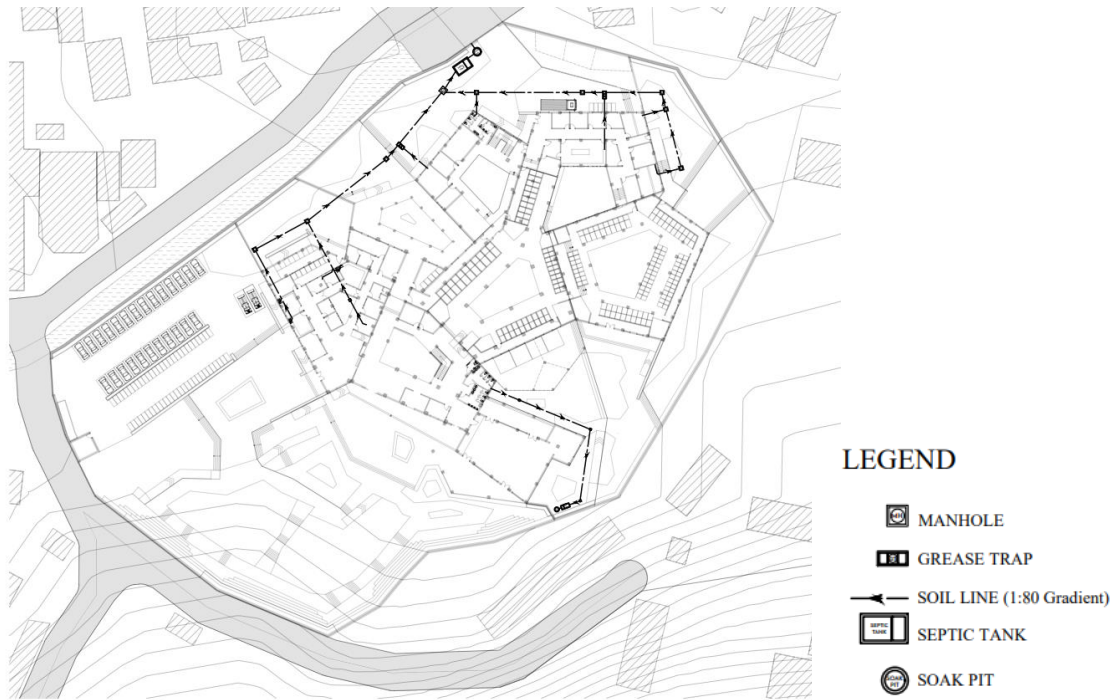


Figure 196: Drainage Plan

6.11.2. Fire Fighting System

The firefighting system is placed as follows in the facility:

- Fire hydrants spaces approximately at 30m intervals in loop system encircling the main building and around the site periphery.
- The hydrants are places about 15m away from the building periphery.
- Provision for 1 fire extinguisher per 600 sq. m. of floor area is considered.



Figure 197: Fire Hydrant Layout

CONCLUSION

The animal shelters have always been thought and designed to maximize the numbers of animals being held. Capacity, not quality has been the priority. They are warehoused, not rehabilitated. The existing animal shelters in Nepal have the design of rows of cells for housing animals while trying to maintain efficiency of space, cleaning and feeding, a place where no-one would want to visit.

Animal shelters should be a place of calmness and serenity both for the animal inhabitants as well as their human caretakers and visitors. There is a need to create people-oriented place, which integrated human animal habitats and interactive platforms. The shelters should be a place where animal welfare, human-animal interaction, training center and learning center for animal lovers. This should contain all the amenities required for the animal welfare like clinic facilities, holding facilities, interacting spaces and open field. Not only focusing on the function of the space, it should also change the past belief of a traditional shelter. The animal relation with clean and green environment should be focused along with the supporting amenities which will eventually aid in sustaining the shelter.

The animal shelter has been designed considering the present context and the problems on the existing animal shelters. The shelter has been designed with a holding capacity of 150 dogs. The building is set up primarily as a single-story structure. The blocks are organized to create a series of courtyards, serving as exterior areas for the dogs as well as for the people. The courtyards scheme makes it possible to avoid the jail-like fencing found at canine shelters. The shelter has provided a safe and better environment for the dogs with the inclusion of a separate landscape and indoor holding and treatment facilities for the dogs. The separate spaces given for the interaction of the dogs and the nature also aids in their physical and mental rehabilitation. Spaces have been given for various programs and events that can help to educate community and encourage people for the adoption of the street dogs.

The shelter and the holdings for the dogs has been design considering the physiology of the dogs. Spaces have been such that human interaction is limited to certain spaces only and other spaces are kept exclusively for the dogs and the caretakers. The behavior of the dogs has also been taken into consideration which effected the layout of the holdings and dog runs. The location of the site has been chosen in hopes to solve the problems of noise created from the dogs. There is less disturbance from the noise from the facility as there are very less residential buildings and is on the edge of forestry zone where there is very less chance of a new settlement being created. The trees also act as a buffer zone for the facility.

Thus, the design has fulfilled the Barkitecture through an idea of providing pocket spaces for the dogs as well as other users of the facility.

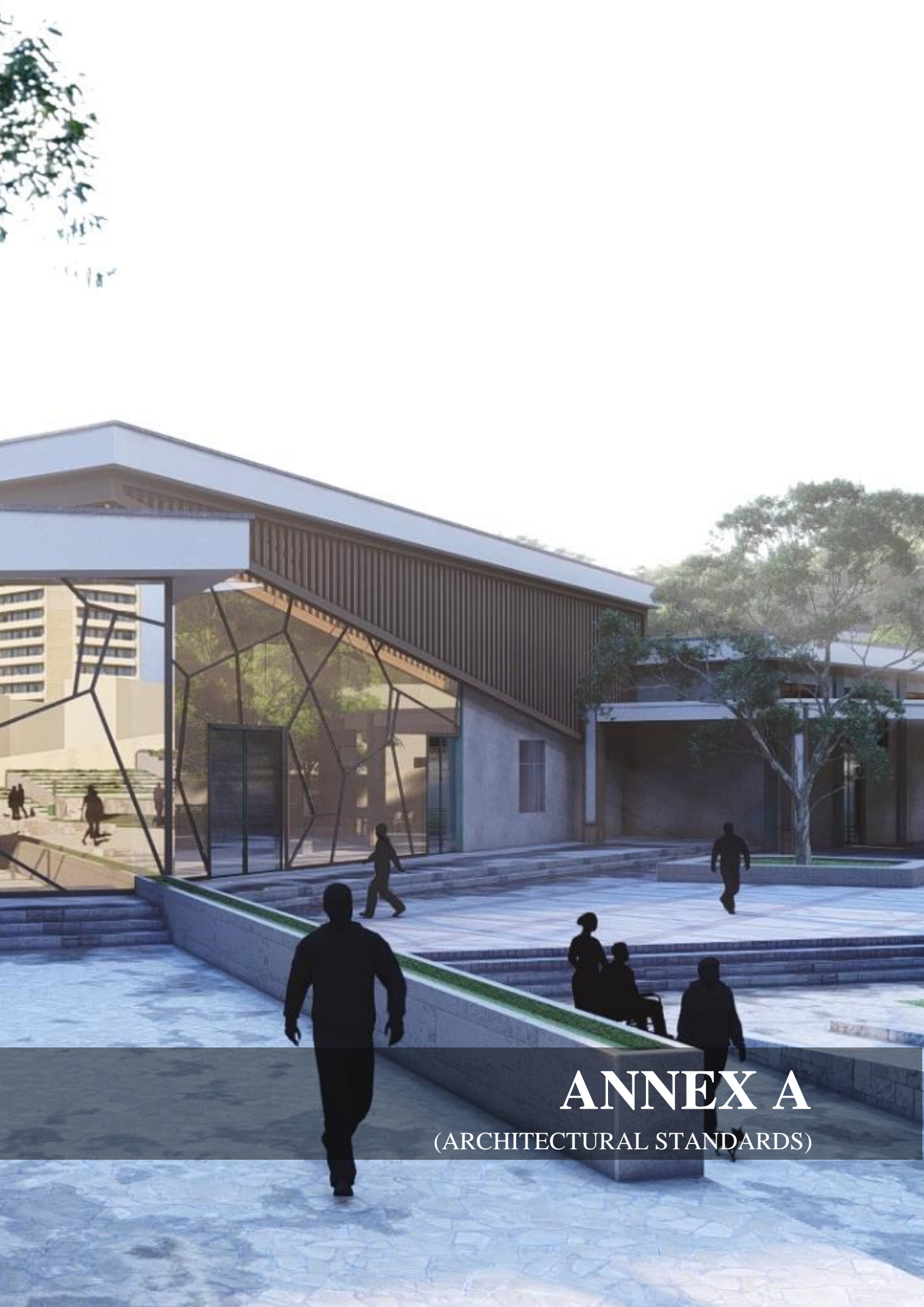
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ANNEX A
(ARCHITECTURAL STANDARDS)

ARCHITECTURAL STANDARDS

1. OFFICE

It is desirable that private office be a minimum of 100 sq.ft. and a maximum of 300 sq.ft. each in size depending upon the requirements of the occupants. The application of the following considerations will assist the space planner to attain functional effectiveness in the final layout.

- In order to create flexibility, promote air quality, increase natural light penetration and reduce costs, attempt to limit the number of enclosed workstations to 45% of the total workstations on a floor.
- Enclosed workstations may be provided to senior managers and positions which conduct continuous confidential meetings.
- Enclosed offices should be positioned on the building core and provided with glazing to receive natural light.
- Allocate approximately 25% of the space as circulation space.
- Provide for conference-size rooms by connecting adjoining meeting rooms with ceiling height, soundproof, moveable partitions.
- Plan the size of smaller support spaces so that they can be interchangeable with workstations for people. Attempt to standardize workstation furniture so that, when moves occur, only people need to move.

	in	cm
A	30–39	76.2–99.1
B	66–84	167.6–213.4
C	21–28	53.3–71.1
D	24–28	61.0–71.1
E	23–29	58.4–73.7
F	42 min.	106.7 min.
G	105–130	266.7–330.2
H	30–45	76.2–114.3
I	33–43	83.8–109.2
J	10–14	25.4–35.6
K	6–16	15.2–40.6
L	20–26	50.8–66.0
M	12–15	30.5–38.1
N	117–148	297.2–375.9
O	45–61	114.3–154.9
P	30–45	76.2–114.3
Q	12–18	30.5–45.7
R	29–30	73.7–76.2
S	22–32	55.9–81.3

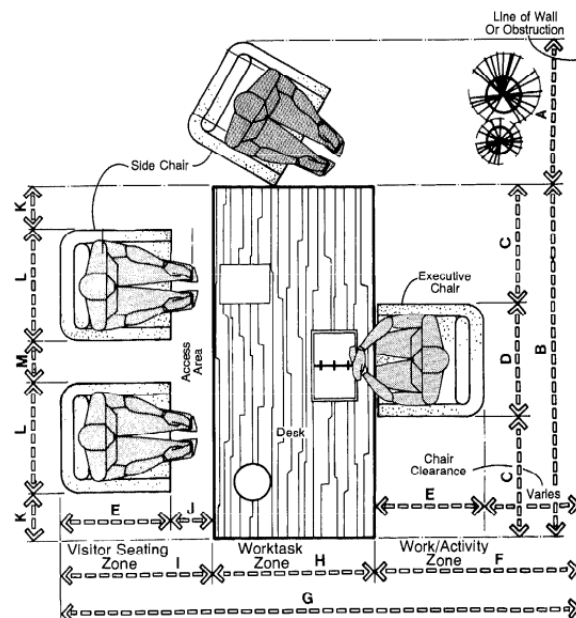


Fig: Executive Desk w/ Visitor Seating

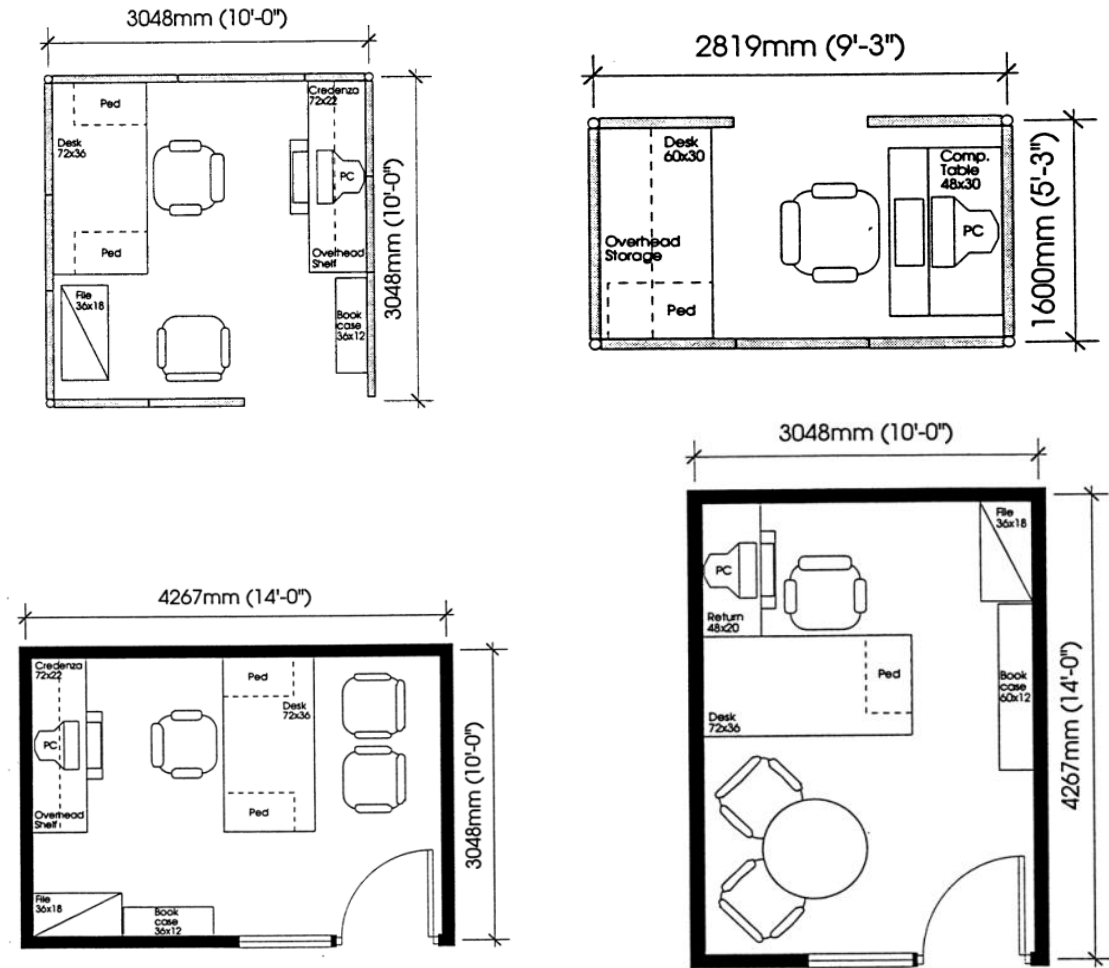


Fig: Various Office Layouts

2. MEETING ROOM

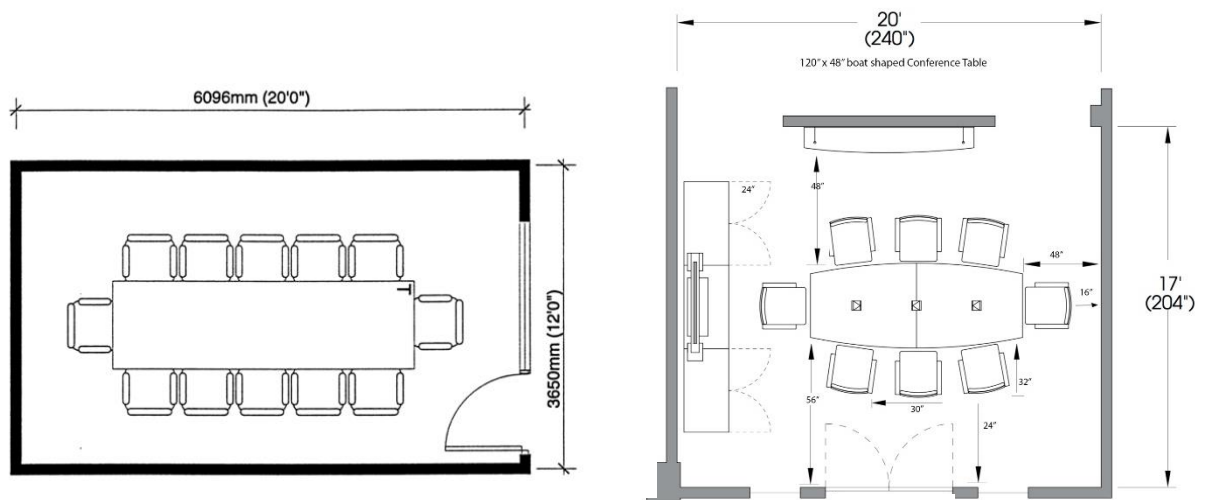


Fig: Meeting Room Layouts

3. RECEPTION AND WAITING AREA

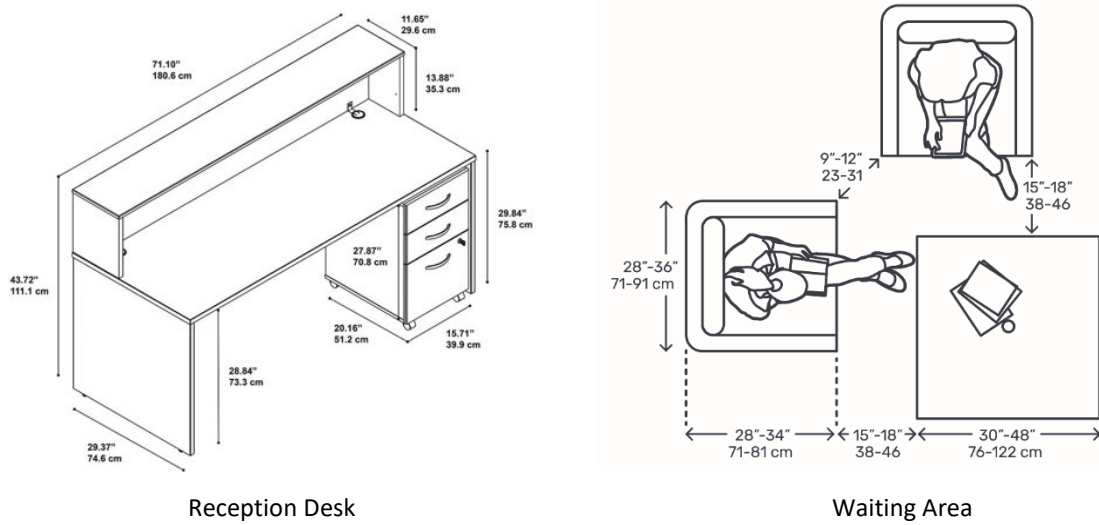


Fig: Reception Area Design Standards

4. PET STORE

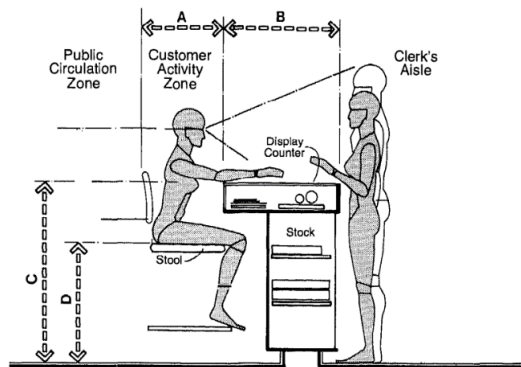


Fig. 1 Seated customer/high counter height.

	in	cm
A	26-30	66.0-76.2
B	18-24	45.7-61.0
C	42	106.7
D	28	71.1
E	84-112	213.4-284.5
F	18	45.7
G	18-24	45.7-61.0
H	30-48	76.2-121.9
I	18-22	45.7-55.9
J	35-38	88.9-96.5
K	72	182.9

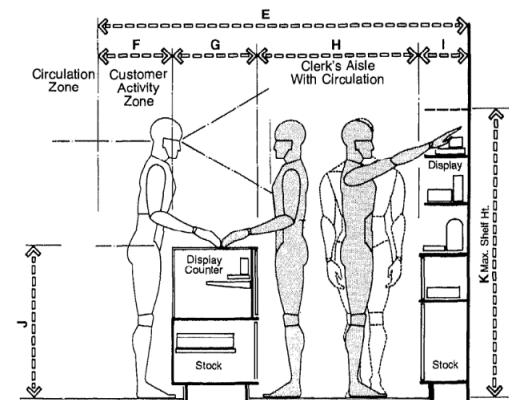


Fig. 2 Typical sales area/standing customer.

Fig: Section through Cash Counter

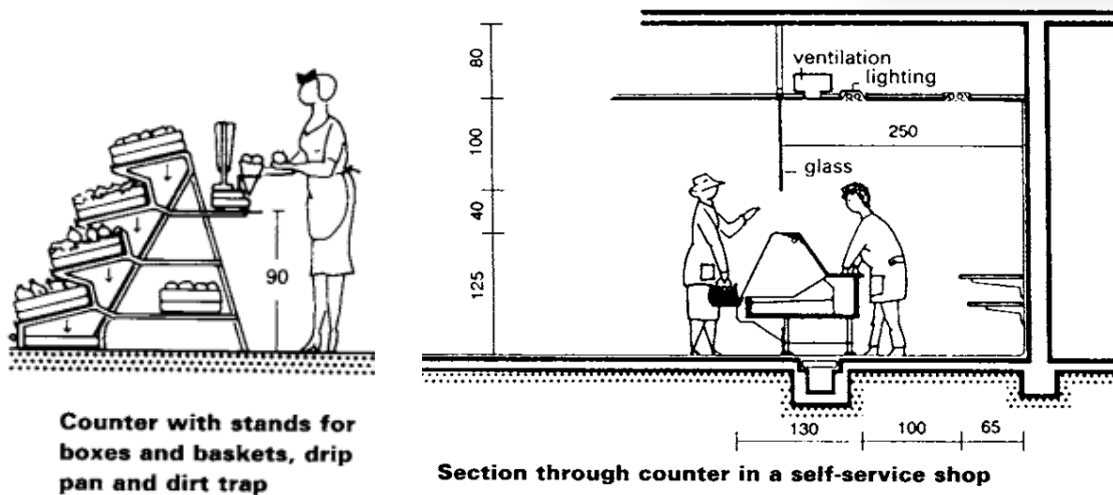


Fig: Section through Display Counter

5. PARKING

Parking spaces are usually outlined by 12-20 mm wide yellow line or white painted lines. When parking facing a wall, these lines are often painted at a height of Upto 1 m for better visibility. Guide rails in the floor along the side have also proved to become popular for demarcation of parking limits and can be about 50-60 cm long, 20 cm wide and 10 cm high. Where vehicles are packed in line facing walls or at the edge of parking deck in a multi-storey car-park, it is common practice to provide buffers, restraining bars or railings up to axle height to prevent cars from going over the edge.

Table: Vehicle Standard Dimension

type of vehicle	length (m)	width (m)	height (m)	turning circle radius (m)
motorcycle	2.20	0.70	1.00 ²⁾	1.00
car				
- standard	4.70	1.75	1.50	5.75
- small	3.60	1.60	1.50	5.00
- large	5.00	1.90	1.50	6.00
truck				
- standard	6.00	2.10	2.20 ¹⁾	6.10
- 7.5t	7.00	2.50	2.40 ¹⁾	7.00
- 16 t	8.00	2.50	3.00 ¹⁾	8.00
- 22t (+16 t trailer)	10.00	2.50	3.00 ¹⁾	9.30
refuse collection vehicle				
- standard 2-axle vehicle (4 × 2)	7.64	2.50	3.30 ¹⁾	7.80
- standard 3-axle vehicle (6 × 2 or 6 × 4)	1.45	2.50	3.30 ¹⁾	9.25
fire engine	6.80	2.50	2.80 ¹⁾	9.25
furniture van (with trailer)	9.50 (18.00)	2.50	2.80 ¹⁾	9.25
standard bus I	11.00	2.50 ³⁾	2.95	10.25
standard bus II	11.40	2.50 ³⁾	3.05	11.00
standard vehicle - bus	11.00	2.50 ³⁾	2.95	11.20
standard vehicle - articulated bus	17.26	2.50 ³⁾	4.00	10.50-11.25
standard articulated truck	18.00	2.50 ⁴⁾	4.00	12.00 ⁵⁾
tractor		2.50 ⁴⁾	4.00	
trailer		2.50 ⁴⁾	4.00	
max. values of the road regulations				
2-axle vehicle (4 × 2)	12.00	2.50 ⁴⁾	4.00	12.00
vehicle with more than 2 axles	12.00	2.50 ⁴⁾	4.00	12.00
tractor with semi-trailer	15.00	2.50 ⁴⁾	4.00	12.00
articulated bus	18.00	2.50 ⁴⁾	4.00	12.00
trucks with trailer	18.00	2.50 ⁴⁾	4.00	12.00

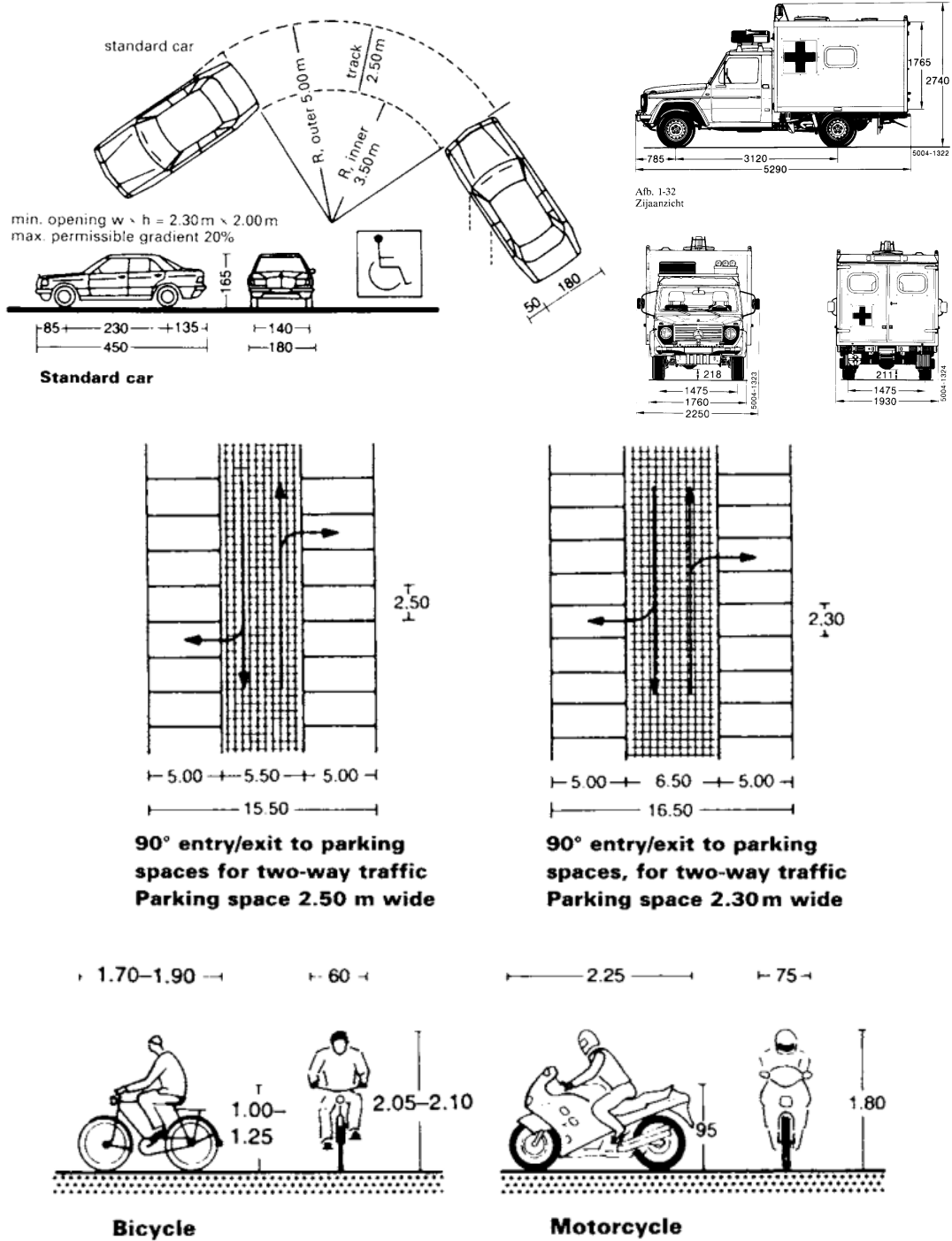


Fig: Parking Design Standards

6. LAUNDRY/UTILITY ROOMS

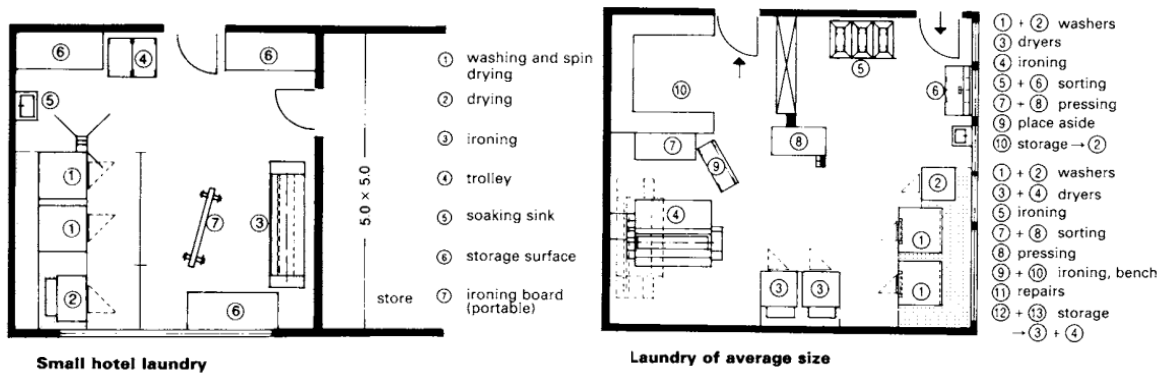


Fig: Laundry General Layout

7. ENVIRONMENT FRIENDLY INCENARATOR

Smokeless incinerator is considered for the environment friendly cremation. All the service person has to do is unload it, connect it to gas and electricity, and attach the exhaust stack. Featuring a larger secondary chamber and faster cremation times than the basic cremation system, the Powerpack II PLUS is perfect for shelters that could perform up to 6 cremations per day. Dimension of the incinerator are as follows.

- Overall Height: 9' (2.74m)
- Overall Width: 5'9" (1.75m)
- Overall Length: 14'11" (4.55m)
- Weight: 12,700 kg
- Fuel: Natural or LPG Gas
- Electricity: 230 Volts, 1-phase/ 3-phase

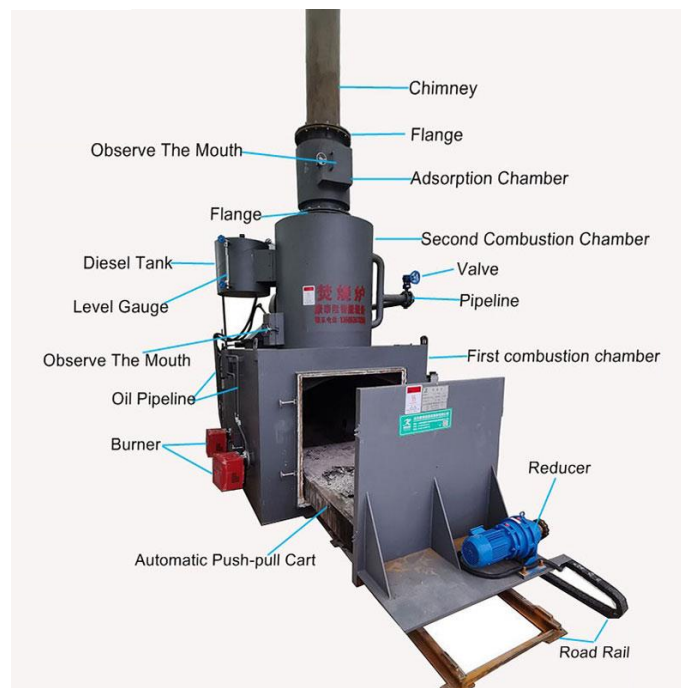


Fig: Smokeless Incinerator

8. STAFF QUARTER

The staff members need a place where they can relax privately during a break or during lunch. It should be furnished with a sleeper-sofa, refrigerator, micro-wave oven, and a table with chairs for convenience of staff. It may consist of staff lounge, pantry, dining, changing rooms, staff washrooms and locker rooms.

It is necessary that some responsible person be in or near the shelter at all times. This requires that a room with plumbing facilities nearby or a small apartment be provided for the person or persons who will be required to remain on the premises overnight.

It is the housing provided by an employer for the staffs. It may be individual homes for family members or private bedrooms for individual staffs sharing the living and feeding spaces. Usually, bedrooms maybe provided for foreign volunteers and houses for permanent staffs when needed. Staff quarters may be individual housing units or multiple bedrooms with common services.

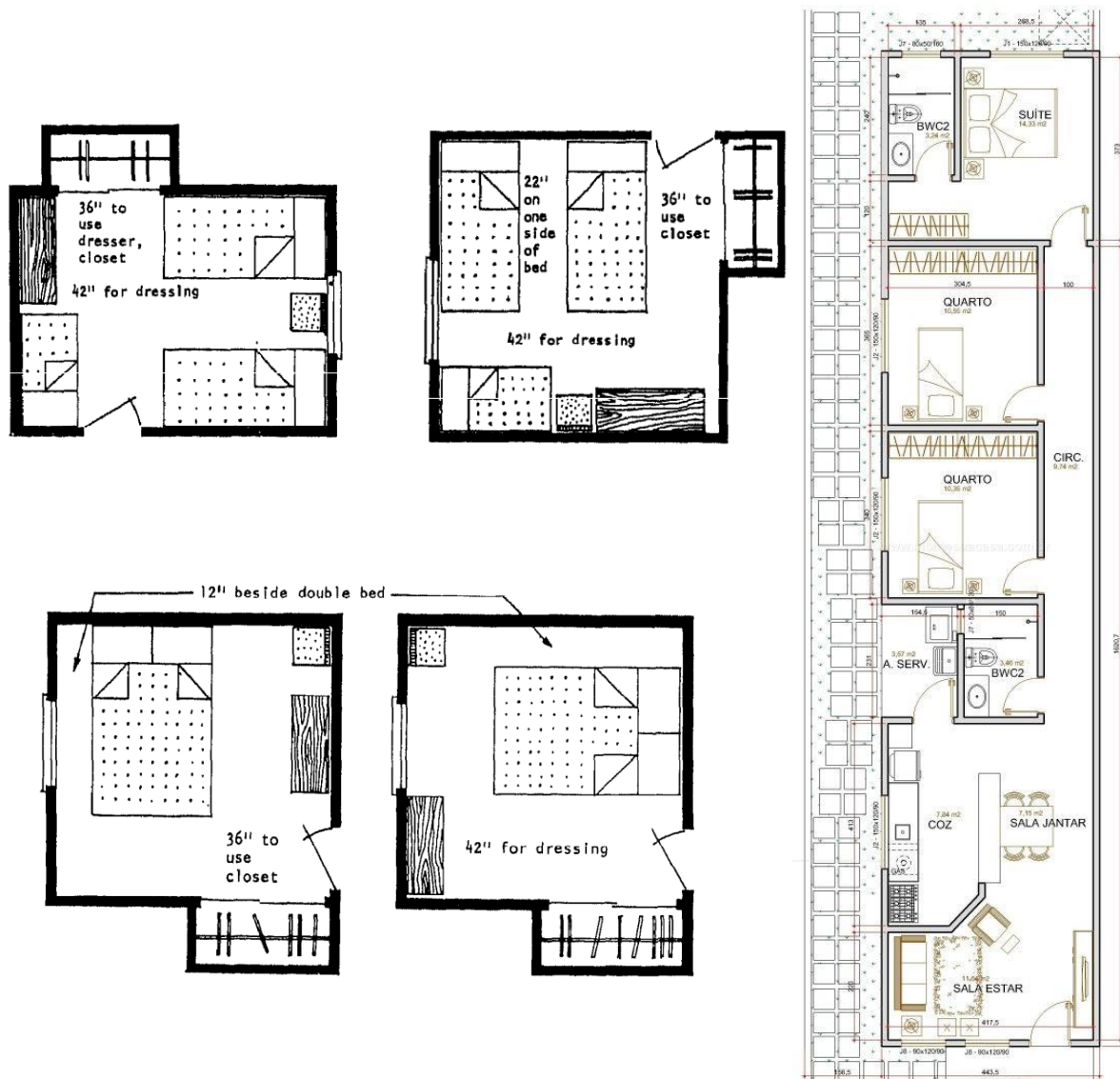


Fig: Bedroom and Staff Quarter General Layout

9. CAGES

S. No.	Different Size Dogs	Night Box	Kennel	Exercise Area	Minimum Fence Height
1.	Small Dogs (less than 7 kg, e.g. Toy breeds)	900 mm* 700 mm	500 mm* 500 mm plus Run: 600 mm* 1000 mm	3m*2m for one dog (add 1m each way for each additional dog allowed to exercise in that area)	1.2 m
2.	Medium Dogs (7-20 kg, e.g. Cocker Spaniels, Shetland Sheepdogs)	1200 mm* 800 mm	600 mm* 700 mm plus Run: 800 mm* 1000 mm	Exercise Area: 3m*3m for one dog	1.8 m
3.	Large Dogs (20-40 kg, e.g. Labradors, Dobermans)	1000 mm* 1500 mm	800 mm* 800 mm plus Run: 1000 mm* 800 mm	4m*4m for one dog	1.8 m
4.	Extra Large Dogs (>40 kg, e.g. Great Danes, St. Bernard)	1000 mm* 1200 mm	1200 mm* 1200 mm plus Run: 1200 mm* 2400 mm	5m*5m for one dog	1.8 m

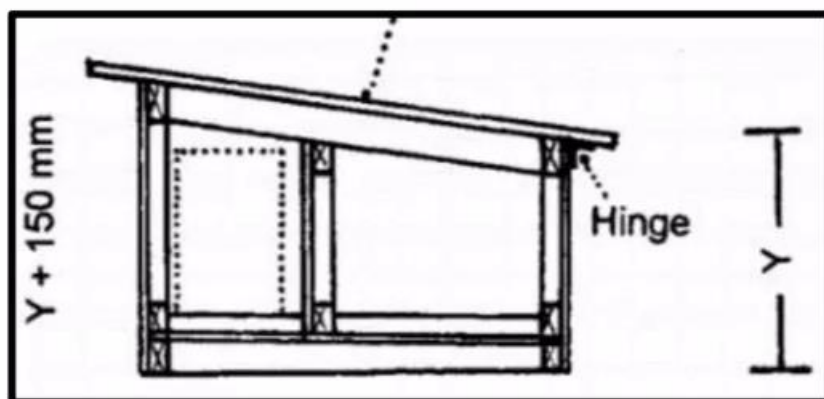


Fig: A Typical Kennel

10.KITCHEN

Kitchen size is determined by the number of workstations, the space required for equipment, the range of meals and the extent of food preparation. Therefore, number of covers or number of seats are not adequate guides.

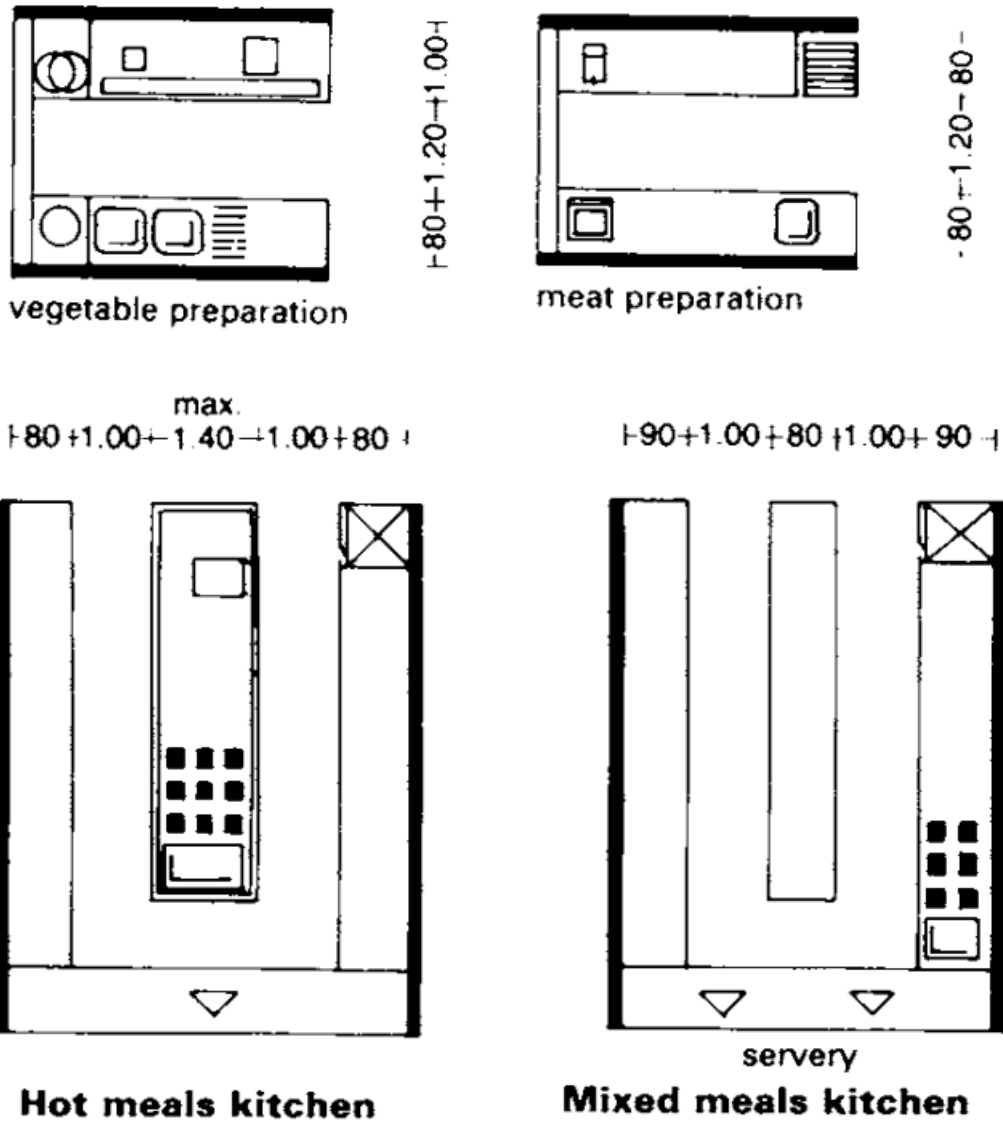


Fig: General Kitchen Layout



JERRY

TOM

MOMO

NO

ANNEX B

(DESIGN AND DRAWINGS)



BARKITECTURE
— RESCUE ARCHITECTURE FOR DOGS —

BARKITECTURE

Rescue Architecture for Dogs

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BARKITECTURE

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