

06c

Background Studies for Working Policy and Guidebook

Table of Content

Preface	3
Section 0.1: About the Background Studies	5
Section 1.2: Summary of Findings	13
Chapter 2: Qualifying Historic Railway Station	14
Section 2.1: Qualifying Indian Railway Station Architecture and Planning Properties	14
Section 2.2: Evolution of the Indian Railway Station and Station Area Design	16
Section 2.3: Categorizing of Railway Stations and Station Areas (for Field Work)	20
Chapter 3: Field Work and Case Studies	23
Section 3.1: Field Work	23
Section 3.2: Appraisal of Existing Laws and Norms	26
Section 3.3: Summary of Case Studies	29
Appendix I: Excerpts from Field Work at Howrah, Shimla and Egmore Railway Stations	37
Section 01 Howrah Railway Station	37
Section 02 Shimla Railway Station	47
Section 03 Egmore Railway Station	55
Appendix II: Comparative study of National Norms, Acts and Laws applicable to Heritage Protection	65
Section 01 Findings UBBL 2016	65
Section 02 Findings from AMASR Act (Amendment and Validation), 2010	68
Section 03 Findings from Model Building Bye-Laws, 2016	70
Appendix III: Comparative study of Heritage Protection Norms of Selected Cities	76
Section 01 Findings from Jaipur City	76
Section 02 Findings from Ahmedabad City	81
Section 03 Findings from Mumbai	84
Section 04 Findings from Kolkata	87
Section 05 Findings from Howrah, West Bengal	91
Section 06 Findings from Chandigarh	93
Section 07 Findings from Nagpur	93
Index	100
I. Abbreviations	100
II. Definitions of Terms Used	102
III. Combined References and Bibliography for 06a: Working Policy for RHA, 06b: Guidebook for Conservation of RHA and 06c: Background Studies for Working Policy and Guidelines	106
Acknowledgement	114

List of Figures

Figure 1: Station Design and Planning Determinants	14
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List of Tables

Table 1: Schedule of remaining parts of the Manuals for Station Redevelopment including Commercial Development	6
Table 2: Dating Railway Stations selected for Redevelopment	7
Table 3: Summary of Findings	13
Table 5: Chronological Evolution of Design Principles of Indian Railway Stations and Station Areas	16
Table 6: Distribution of immovable Railway Heritage Asset and Heritage Asset in Station and Station Area	19
Table 7: Categorization and Comparison of Railway Station Areas	21
Table 8: Key Observations from Field Work and Pointers for Working Policy and Guidelines	23
Table 9: Comparative Summary of Laws Applicable to Heritage Protection	26
Table 10: Comparative Summary Appraisal of Local Heritage Protection Norms of Selected Cities	28
Table 11: Summary of Case Studies	29
Table 11: Findings from National Norms and Acts – UBBL 2016	65
Table 13: Findings from National Norms and Acts – AMASR Act, 2010	68
Table 14: Findings from National Norms and Acts – Model Heritage Regulations, TCPO, MoUD	70
Table 15: Findings from Heritage Protection Norms – Ahmedabad City	81
Table 16: Findings from Heritage Protection Norms – Mumbai	84
Table 17: Findings from Heritage Protection Norms – Kolkata	87
Table 18: Findings from Heritage Protection Norms – Howrah	91
Table 19: Findings from Heritage Protection Norms – Chandigarh	93
Table 20: Findings from Heritage Protection Norms – Nagpur Metropolitan Area	93

List of Maps

Map 1: Howrah Before 1832 - Pre-Railways	37
Map 2: Howrah 1845–1852 - Railway Land, Line and Station	39
Map 3: Howrah 1845-1890 - Station Line Expansion	40
Map 4: Howrah 1845-1890 – Linkages, Interchange Node	41
Map 5: Howrah Station Expansion from 1890-1945	43
Map 6: Howrah Station - New Howrah Bridge and Tram Network	44
Map 7: Howrah - Present-day River Frontage	45
Map 8: Howrah - Present-day Surroundings	46
Map 9: Shimla 1817-1840 - Pre-Railways	47
Map 10: Shimla 1842-1880 - Pre-Railways - Development of Structures	48
Map 11: Shimla 1884-1902 - Survey of Land	49
Map 12: Shimla 1903-1914 - Kalka-Shimla Railway	50
Map 13: Shimla 1915-1991 - Development and Changes	51
Map 14: Shimla – Present-day Linkages	52
Map 15: Shimla – Present-day Interchange Nodes	53
Map 16: Shimla – Present-day Surroundings	54
Map 17: Egmore 1626-1796 Pre-Railways	55
Map 18: Egmore 1796-1799 - Egmore Redoubt	56
Map 19: Egmore 1799 - Male Asylum and Redoubt	57
Map 20: Egmore 1800-1819 - Linkages	58
Map 21: Egmore 1820-1855 - Surroundings	59
Map 22: Egmore – 1906-1908 – Construction of Egmore Railway Station	60
Map 23: Egmore 1909-1938 - Surroundings post Railways	61
Map 24: Egmore - Present-day Linkages	62
Map 25: Egmore - Present-day Interchange Nodes	63
Map 26: Egmore - Present-day Surrounding Uses	64

Preface

The Development Control plays an important role in guiding and facilitating the physical Development. Since the commercial development along with station redevelopment in the railway land is to be done under Section 11 of the Railways Act 1989, there was a need to have set of Manuals/Guidelines to guide the entire development. In fact the Union cabinet has approved (in terms of communication received from Ministry of Railways, GOI vide letter No. 2011/LMB.WCS/22/07/25 Pt.1 dated 17.10.2018) that 'Railways/RLDA/IRSDC shall consult urban local bodies/other statutory authorities while approving its plans in terms of powers conferred to it under Section 11 of the Railways Act 1989 so that the development in Railway Land is harmonious with surrounding development, generally following National Transit Oriented Development (TOD) Policy. No change in Land Use is required pan India by Railways for developing railway land for commercial use.' It is further approved that IRSDC shall be the Nodal Agency and the main Project Development Agency for redevelopment/development of all stations. MoHUA has also conveyed the approval of Union Cabinet to Chief Secretaries of All States/UTs to incorporate suitable provisions in the local byelaws/ development control norms in congruence with the National TOD Policy as well as relevant provisions of the Railways Act to facilitate Railways/RLDA/IRSDC to proceed with their development plans in consultation with local bodies/other statutory authorities, at the earliest.

Accordingly as the Nodal Agency for station redevelopment, IRSDC took upon the responsibility, on behalf of Railways/RLDA besides for guiding its own work for station redevelopment along with commercial development, to produce a series of Manuals/Guidelines to guide the Architects/Developers/Concessionaires as well as the Authority on the Procedures, Dos & Don'ts in preparing development plans and submitting the applications for approval of Layout Plans and Building Plans of the commercial development to IRSDC.

IRSDC aims to transform the railway stations and the adjoining land into a "RAILOPOLIS" - a Mini Smart 24/7 City Centre where one can live, work, play and ride while putting the land resources to optimal use following the National Transit Oriented Development Policy norms. The aim is to facilitate developments by streamlining policies and making the Manuals/Guidelines as transparent as possible to promote ease of doing business. The Manual on Form Based Codes explains various developments such as buildings set back, ground coverage, FAR, heights etc. while Manual on building plan approval and commercial assets covers the process for the approval of building plans. The Manuals are mandatory while the Guidelines are Recommendatory and the Development Agreement/Concession Agreement or any other legal agreement between IRSDC (Authority) and Developments/Concessionaires shall prevail over and above the guidelines.

The advantage of the Manual on Form Based Codes is that it facilitates flexibility in development of mix use (horizontal and vertical mixing) to make the development sustainable, user friendly and market responsive while most of the local building byelaws restrict mixing which is essential for development of TOD. The guidelines propose good practices related to Construction Standards that promote and protect health, safety and general welfare of the occupant and environment across its life cycle while permitting dynamic building use.

These "Manuals for Station (Re)development including Commercial Development" is a comprehensive set of documents which provide standards and guidelines in the following order of decreasing priority-

1. Safety Standards, (like fire safety, earthquake related controls, etc.)
2. Passenger and user comfort and convenience.
3. Environmental Conservation (Natural and Man-made)
4. Heritage Conservation
5. Design and aesthetic in harmony

These Manuals and Guidelines have been prepared over a period, after research, site visits, case studies, best practices, study of other similar national, international designs, National TOD Policy and Form Based Codes (as advised by MoHUA), National Building Codes, UBBL-2016 and Environment Management Guidelines issued by MoEF&CC. Some of these have also been applied and tested on the on-going projects of IRSDC.

PUBLIC CONSULTATIONS: The (draft) Manuals and Guidelines were posted on IRSDC's website. These documents are available for reference at- www.irsdc.in. The stakeholder consultation was held via six (6) national webinars during April 2021- July 2021. The attendees were provided with a brief overview of salient features of the Manual, Guidelines, etc. Over 1300 participants, which included about 25 Government Agencies, Educational Institutions, Professional Bodies, Centres of Excellence, and senior professionals, attended, and shared their valuable feedback during the Webinars and over emails.

These Manuals and Guidelines have now been adopted for Station Redevelopment Works after incorporating relevant feedback and other suggestions by all the stakeholders. Further, final draft Manuals and Guidelines were discussed in the Plan Sanctioning and Monitoring Committee (PSMC) where subject experts were also invited as special invitees in July 2021. IRSDC's Board of Directors (BOD) has also deliberated on this subject in August 2021 for adoption and application to the program of (re)development of Railway Stations along with Commercial Development. These Manuals and Guidelines are expected to transform the railway area around stations into model development as envisaged also by MoHUA and spur similar development in surrounding area.

STRUCTURE OF THIS GUIDEBOOK FOR CONSERVATION OF RAILWAY HERITAGE ASSETS

Sl. No.	Chapter/ Appendix	Content
1	Quantitative Analysis	Dating Railway Stations selected for Redevelopment, Summary of Findings
2	Qualifying Historic Railway Station	Qualifying Indian Railway Station Architecture and Planning Properties, Evolution of the Indian Railway Station and Station Area Design, Categorizing of Railway Stations and Station Areas (for Field Work)
3	Field Work and Case Studies	Field Work, Appraisal of Existing Laws and Norms, Summary of Case Studies
4	Appendix I: Excerpts from Field Work at Howrah, Shimla and Egmore Railway Stations	Howrah Railway Station, Shimla Railway Station, Egmore Railway Station
5	Appendix II: Comparative study of National Norms, Acts and Laws applicable to Heritage Protection	Findings UBBL 2016, Findings from AMASR Act (Amendment and Validation), 2010, Findings from Model Building Bye-Laws, 2016
6	Comparative study of Heritage Protection Norms of Selected Cities	Findings from Jaipur City, Findings from Ahmedabad City, Findings from Mumbai, Findings from Kolkata, Findings from Howrah, West Bengal, Findings from Chandigarh, Findings from Nagpur
7	Index	Abbreviations, Definitions of Terms Used, Combined References and Bibliography for 06a: Working Policy for RHA, 06b: Guidebook for Conservation of RHA and 06c: Background Studies for Working Policy and Guidelines

The manuals and guidelines are intended to be comprehensive for promoting balance and orderly development of railway stations and surrounding city area. Manuals and Guidelines inter-alia provide the framework, necessary technique, norms and standards, and development promotion techniques. Conditions may vary from place to place and accordingly these manuals and guidelines may be applied to all situations and places by adopting to local conditions. These manuals and guidelines fulfil the need for a planning process which facilitate efficient and dynamic station development in overall urban framework.

The manuals and guidelines are also intended to be a possible reference for various aspects of urban planning and design by State Governments, Development Authorities, Private Sector and Planning Organizations.

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Indian Railway Stations Development Corporation Ltd.

Section 0.1: About the Background Studies

Indian Railways envision that their Station Redevelopment works and Commercial Assets shall ensure Conservation of Heritage within their purview.

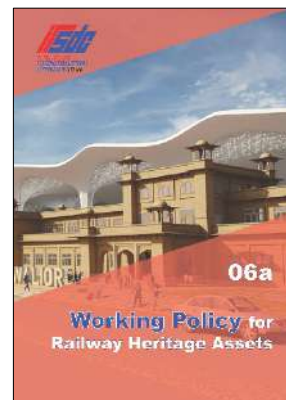
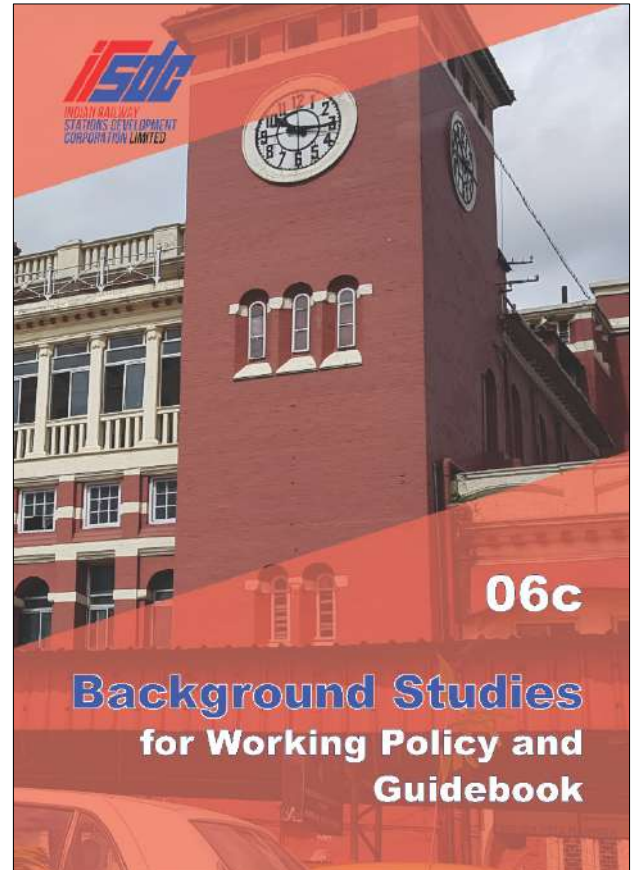
The Working Policy and Guidebook have been developed for the Indian Railways, so that Railway Station (Re)development work responds positively to Railway Heritage Assets (RHA). Departing from the conventional Monument-Centric approach, the focus of these documents are to render it functional, be an integral part of a new age high density Mixed-Use active public zone, support mixed income development, boost same-day tourism, converge diverse revenue streams and provide high-value employment.

The need for Policy and Guidelines for RHA emerged from a detailed study of ongoing consultancy works (in 2021) for Heritage Station Area, ToRs provided with the tender documents, deliberations and discussions with IRSDC representatives.

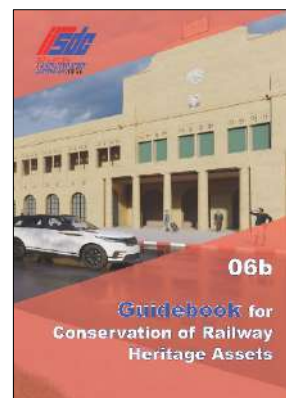
The Content of the Policy and Guidelines for Railway Heritage Assets were determined from the comparative study of:

1. National Normative Frameworks;
2. Localized Normative Frameworks – the Byelaws/Heritage Protection Norms of seven cities; &
3. Morphological evolution of Heritage Stations and Precincts.

This document is a compilation of all these studies conducted to establish the contents of 06a: Working Policy for Railway Heritage Assets and 06b: Guidebook for Conservation of Railway Heritage Assets.



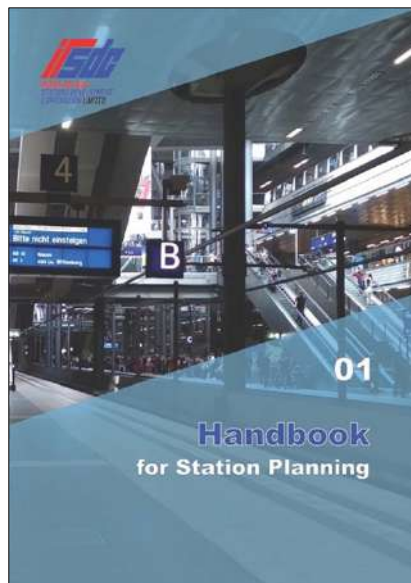
Working Policy for Railway Heritage Assets contains Policy and Guidelines for Conservation, Management and Maintenance of the RHA.



Guidebook for Conservation of Railway Heritage Assets contains guidelines for implementing the Working Policy.

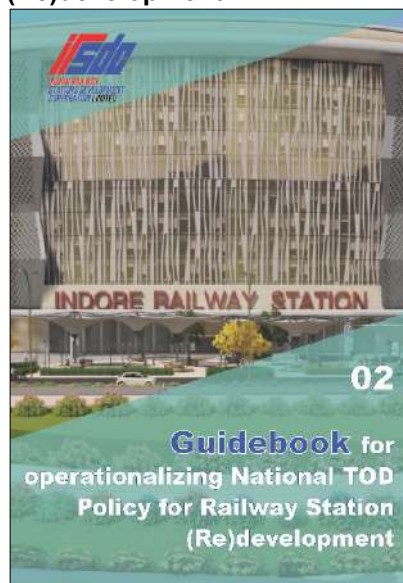
Table 1: Schedule of remaining parts of the Manuals for Station Redevelopment including Commercial Development

**Handbook for Station Planning
(for internal use only)**



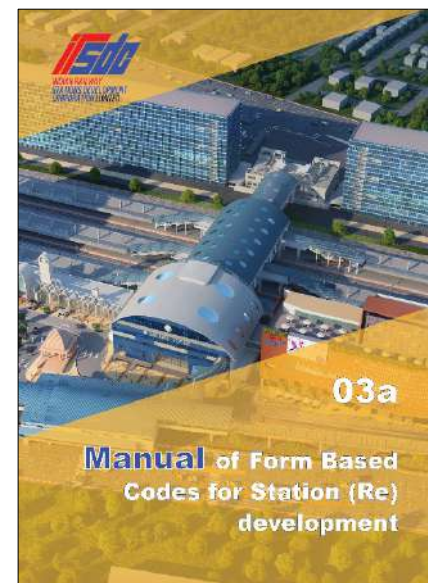
This document contains Norms, Standards and Tools for Design of Station Operational Areas.

**Guidebook for operationalizing
National TOD Policy for
Railway Station
(Re)development**



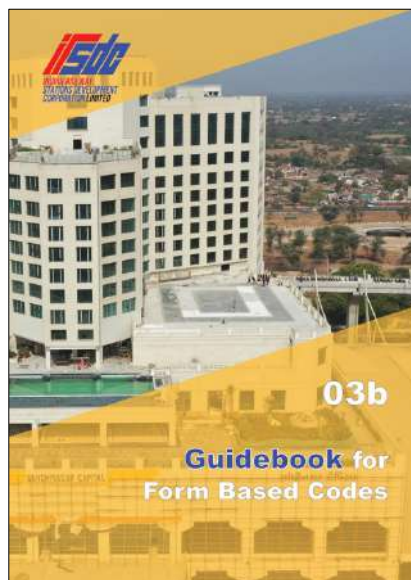
This document contains Tools and Processes for Layout Planning within the Railway Land, with the intent of 'Land Value Capture' for optimum monetization.

**Manual of Form Based Codes
for Station (Re)development**



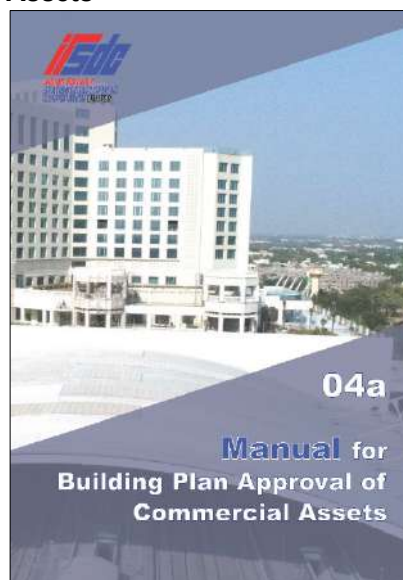
This document contains (a) Development Control Norms (b) Format for preparation of Layout Regulating Plans and (c) Parameters of Property Development Card.

**Guidebook for Form Based
Codes**



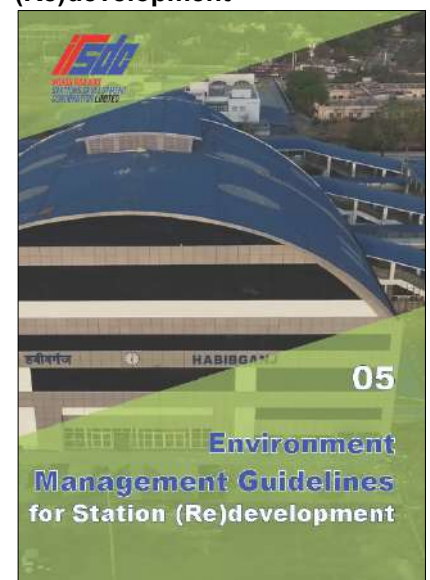
This document assists in preparation of Layout Regulating Plans and Property Development Card.

**Manual for Building Plan
Approval of Commercial
Assets**



This document contains the procedures and parameters for the approval of Building Plan of Commercial Assets.

**Environment Management
Guidelines for Railway Station
(Re)development**



This document contains guidelines for integrating provisions of Environment Management during Layout Planning and is based on the recommendations issued by MoEF&CC, NGT and other statutory bodies.

Chapter 1: Quantitative Analysis

Section 1.1: Dating Railway Stations selected for Redevelopment

This exercise was done as a part of Need Assessment of the Working Policy, and to identify the range of RHA.

NOTE: The years written in italics indicate when the Railway Lines started operation, whereas the others are years when the Station Building was established.

Table 2: Dating Railway Stations selected for Redevelopment

S. No.	Station	Date of Establishment	S. No.	Station	Date of Establishment
1	Abu Road	1880-81	28	Banda	1889 (<i>Jhansi–Manikpur line opened by Indian Midland Railway</i>)
2	Agra Fort	1874	29	Bandel	1854
3	Ahmednagar	1878	30	Bandikui	1874
4	Akbarpur	1873	31	Bangalore Cantonment	1864
5	Akola	1867	32	Bangarpet	1864
6	Alappuzha	1989	33	Bapudham Motihari	1886 (<i>Barauni–Samastipur section</i>)
7	Aligarh	1865-66	34	Barabanki	1872
8	Alipurduar Junction	1901	35	Barauni Junction	1883
9	Allahabad	1859	36	Bardhaman	1854-55
10	Aluva	1902 (<i>Shoranur–Cochin Harbour section</i>)	37	Barmer	1902 (<i>Marwar Junction–Munabao line</i>)
11	Alwar	1874-75	38	Barpeta Road	1857 (<i>Eastern Bengal Railway</i>)
12	Amravati	1867 (<i>Nagpur–Bhusawal section of Howrah–Nagpur–Mumbai line</i>)	39	Basti	1846
13	Anakapalle	1897 (<i>Duvvada–Vijayawada section</i>)	40	Bathinda Junction	1884
14	Anantapur	1892-93	41	Beas	1870 (<i>Ambala–Attari line</i>)
15	Ankleshwar	1860 (<i>Ankleshwar Junction to Utran</i>)	42	Belgaum	1887
16	Anugraha Narayan Road	1907 (<i>Gaya–Mughalsarai section</i>)	43	Bellary	1896
17	Ara Junction	1911	44	Belthara Road	1930 (<i>Allahabad– Mau–Gorakhpur main line + Varanasi–chhapra line</i>)
18	Arakkonam Junction	1871	45	Bettiah	1883 (<i>Samastipur to Muzaffarpur Branch of the Tirhoot State Railway</i>)
19	Asansol	1863-64	46	Betul	1924 (<i>Bhopal–Nagpur section</i>)
20	Aurangabad	1900	47	Bhadohi	1898 (<i>Varanasi–Rae Bareilly–Lucknow line</i>)
21	Ayodhya	1874	48	Bhadrak	1893-96
22	Azamgarh	1898-1903	49	Bhandara Road	1888
23	Badnera	1860-67	50	Bharatpur	1866 (<i>Mathura–Kota section of New Delhi–Mumbai main line</i>)
24	Bakhtiyarpur Junction.	1903 (<i>Bakhtiyarpur–Bihar Sharif light railway</i>)			
25	Balasore	1893-96			
26	Ballabgarh	1886 (<i>Kanpur–Delhi Section</i>)			
27	Ballia	1892			

S. No.	Station	Date of Establishment
51	Bharuch	1914 (<i>Bharuch–Jambusar branch</i>)
52	Bhavnagar Terminus	1880
53	Bhilai Power House	1956
54	Bhilwara	1885
55	Bhimavaram Town	1899
56	Bhiwani	1884
57	Bhusawal	1866
58	Bijapur	1884
59	Bikaner	1889-91
60	Bina	1923 (<i>Bina-Katni Line</i>)
61	Bokaro Steel City	1907
62	Bongaigaon	1963-65
63	Brahmapur	1893-96
64	Burhanpur	1870 (<i>Jabalpur–Bhusaval section</i>)
65	Buxar	1862 (<i>Patna–Mughalsarai section; Howrah-Delhi main</i>)
66	Chakki Bank	1952
67	Chalisingaon	1860
68	Champa Junction	1887-1891 (<i>Tatanagar-Bilaspur section of the Howrah–Nagpur–Mumbai line</i>)
69	Chandausi	1872-73
70	Chandrapur	1929 (<i>New Delhi–Chennai main line</i>)
71	Chengalpattu Junction	1880 (<i>Chennai Egmore–Kumbakonam–Thanjavur line</i>)
72	Chengannur	1958
73	Chirala	1899 (<i>Vijayawada–Chennai section</i>)
74	Chittorgarh Junction	1874-81
75	Coochbehar	1894
76	Cuddapah	1866
77	Cuttack	1893-99
78	Daltonganj	1924 (<i>Railway Line from Patratu to Son Nagar</i>)
79	Damoh	1923 (<i>Bina–Katni line</i>)
80	Danapur	1925
81	Davangere	1884 (<i>Bangalore Harihar Railway, a section of the Mysore State Railway</i>)

S. No.	Station	Date of Establishment
82	Dehri-On-Sone	1906
83	Delhi Cantonment	1875 (<i>Delhi–Jaipur line</i>)
84	Delhi Shahadra	1975 (<i>Delhi Ring Railway</i>)
85	Deoria Sadar	1930 (<i>Allahabad–Mau–Gorakhpur main line</i>)
86	Dharwad	1920
87	Dibrugarh Town	1883
88	Digha	2004
89	Dimapur	1903
90	Dindigul Junction	1990 (<i>Karur and Madurai Junction</i>)
91	Durgapur	1855
92	Eluru	1893-96
93	Ernakulam Town	1890
94	Erode Junction	1862
95	Etawah	1860-66
96	Faizabad	1874
97	Falna	1881 (<i>Jaipur–Ahmedabad Line</i>)
98	Faridabad	1904
99	Fatehpur	1859
100	Firozpur Cantonment	1905-1912
101	Gandhidham	1955
102	Ghaziabad	1865-66
103	Gomoh Junction	1906
104	Gonda Junction	1982
105	Gudur Junction	1893-99
106	Guntakal Junction	1872; 1890 (<i>Goa-Guntakal Metre Gauge</i>) 1892-93 (<i>Guntakal-Bangalore</i>)
107	Guntur Junction	1916
108	Gurgaon	1876 (<i>Rajputana-Malwa Railway</i>)
109	Hajipur Junction	1886 (<i>Hajipur–Muzaffarpur–Samastipur–Barauni</i>)
110	Hanumangarh Junction	1901-1902 (<i>Jodhpur–Bathinda line</i>)
111	Hapur Junction	1900 (<i>Delhi–Moradabad line</i>)

S. No.	Station	Date of Establishment
		1870 (<i>Delhi–Meerut–Saharanpur</i>)
112	Hardoi	1872
113	Hatia	1961 (<i>Netaji S.C. Bose Gomoh–Hatia</i>) 1965 onwards (<i>Hatia–Rourkela</i>)
114	Hisar	1873
115	Hoshangabad	1924 (<i>Bhopal–Nagpur section</i>)
116	Hospet	1884 (<i>Hospet–Bellary</i>)
117	Hubli	1886
118	Itarsi	1870
119	Jagadhri	1870 (<i>Amritsar–Ambala–Jagadhri–Saharanpur–Ghaziabad</i>)
120	Jaisalmer	1921
121	Jajpur-Keonjhar Road	1896
122	Jalgaon	1860
123	Jalandhar Cantonment	1870
124	Jalna	1905 (<i>Secunderabad–Manmad Line</i>)
125	Jamalpur	1862
126	Jamnagar	1897
127	Jamui	1871 (<i>Howrah–Patna–Mughalsarai Line</i>)
128	Janghai	1906-07 (<i>Janghai - Allahabad–Jaunpur Branch</i>)
129	Jasidih	1871
130	Jaunpur	1872
131	Jaynagar	1902
132	Jharsuguda	1891
133	Jogbani	1887-1901 (<i>Barauni–Katihar, Saharsa and Purnia sections</i>)
134	Jorhat Town	1884 (<i>Jorehaut Provincial Railway</i>)
135	Kakinada Town	1893
136	Kalka	1891
137	Kamakhya	1889 (<i>Barauni–Gauhati Line</i>)
138	Kanhangad	1907 (<i>Shoranur–Mangalore Section</i>)
139	Kanyakumari	1972
140	Kannur	1907
141	Karnal	1891

S. No.	Station	Date of Establishment
142	Karur Junction	1866
143	Kasargod	1898
144	Kathgodam	1884
145	Katihar Junction	1889
146	Katni	1870 (<i>Howrah–Allahabad–Mumbai line</i>)
147	Katpadi	1864 (<i>Chennai Central–Bangalore City line</i>)
148	Kayamkulam Junction	1958
149	Kazipet Junction	1874-89
150	Kengeri	1882 (<i>Mysore–Bangalore line</i>)
151	Khagaria Junction	1883 (<i>Samastipur–Khagaria line</i>)
152	Khalilabad	1885 (<i>Gorakhpur–Basti–Lucknow line</i>)
153	Khammam	1889 (<i>Kazipet–Vijayawada section</i>)
154	Khandwa	1866
155	Khurda Road	1897
156	Kishanganj	1915
157	Kiul Junction	1864
158	Koderma	1906-1907 (<i>Asansol–Gaya section of Howrah–Gaya–Delhi line</i>)
159	Kolhapur	1886
160	Kolkata Terminal	2003-06
161	Kollam Junction	1904
162	Kopargaon	1878 (<i>Manmad–Daunde broad gauge line</i>)
163	Kottayam	1956
164	Kovilpatti	1891
165	Krishnarajapuram	1882 (<i>Bangalore–Chennai Main line</i>)
166	Kumbakonam	1877
167	Kurduwadi	1859-97
168	Kurnool Town	1930 (<i>Secunderabad–Dhone section</i>)
169	Lalgarh	1901 (<i>Dulmera–Suratgarh Line of Jodhpur–Bikaner Railway</i>)
170	Lalitpur	1880 (<i>Bhopal–Jhansi Section via Bina</i>)
171	Latur	1897

S. No.	Station	Date of Establishment
172	Lumding	1900-03
173	Madhubani	1902
174	Madhupur	1871
175	Mahesana	1881
176	Mahoba	2008 (Mahoba-Khajuraho)
177	Maihar	1867
178	Malda Town	1971
179	Mancherial	1929 (Kazipet-Balharshah section)
180	Mangalore Central	1907 (Shoranur-Mangalore section)
181	Mangalore Junction	1907 (Madras Railway trunk route extended from Calicut to Mangalore)
182	Manmad	1866
183	Marwar Junction	1881
184	Mau Junction	1872
185	Mayiladuthurai Junction	1926
186	Meerut Cantonment	1864-65
187	Meerut City	1911
188	Mettupalayam	1873 (Coimbatore-Mettupalayam line; Nilgiri Mountain Railway)
189	Miraj	1886
190	Mirzapur	1864-66
191	Mokama	1862 (Delhi-Kolkata main line via Mughalsarai-Patna route)
192	Moradabad	1873
193	Morena	1904-1909 (Gwalior Light Railways)
194	Muzaffarnagar	1870
195	Mysore	1870
196	Nadiad	1945
197	Nagarsol	1905 (Secunderabad-Manmad line)
198	Nagaur	1924 (Jodhpur-Bikaner Railway)
199	Nagda	1896 (Nagda-Ujjain section)
200	Nagercoil Junction	1979
201	Naihati Junction	1862

S. No.	Station	Date of Establishment
202	Nanded	1905 (Secunderabad-Manmad line)
203	Narkatiaganj Junction	1930 (Muzaffarpur-Gorakhpur main line)
204	Navsari	1866
205	New Alipurduar	1950 (Barauni-Guwahati line)
206	New Bhuj	1908 (Gandhidham-Bhuj section)
207	New Coochbehar	1966
208	New Farakka	1971
209	Nizamabad	1905
210	Ongole	1899
211	Orai	1889 (Jhansi-Kanpur section)
212	Palakkad Junction	1861 (Jolarpettai-Shoranur line)
213	Palanpur	1952
214	Palasa	1893-96
215	Pali Marwar	1882
216	Panipat	1891-97
217	Panvel	1962
218	Parasnath	1906
219	Parbhani Junction	1860
220	Pratapgarh	1898 (Varanasi-Rae Bareli-Lucknow line)
221	Pathankot	1884
222	Patiala	1887
223	Patna Sahib Junction	1861
224	Payyannur	1907 (Shoranur-Mangalore section)
225	Phagwara	1870
226	Phaphund	1886
227	Phulera	1941 (Merta Road-Rewari line)
228	Pipariya	1870 (Jabalpur-Bhusaval section)
229	Purnea Junction	1887
230	Rae Bareli Junction.	1898 (Varanasi-Rae Bareli-Lucknow line)
231	Raichur	1871
232	Raiganj	1889
233	Raigarh	1895 (Tatanagar-Bilaspur section)
234	Raja Ki Mandi	1904-10
235	Rajahmundry	1899

S. No.	Station	Date of Establishment
236	Rajendra Nagar Terminal	2003
237	Rajnandgaon	1878-80
238	Rajpura Junction	1900
239	Rameswaram	1906
240	Rampur	1894
241	Rampurhat	1971 (Howrah–New Jalpaiguri Line, Sahibganj Loop Line)
242	Ranchi	1907-08
243	Rangiya Junction	1909
244	Rani	1931 (Jaipur–Ahmedabad line)
245	Ratlam	1967 (Diesel Loco Shed at Ratlam)
246	Raxaul Junction	1927
247	Rayagada	1931
248	Renigunta	1862
249	Rewari	1873
250	Rohtak Junction	1897 (Delhi–Fazilka line)
251	Roorkee	1845 (Piran Kaliyar to Roorkee)
252	Rourkela	1891
253	Rudrapur City	1884 (Bhojpur–Kathgodam RandKR Mainline)
254	Sagauli Junction	1930s (Muzaffarpur–Gorakhpur Main Line)
255	Saharanpur Junction	1870 (Amritsar - Saharanpur–Ghaziabad)
256	Saharsa Junction	1887
257	Sainagar Shirdi	2009
258	Salem Junction	1860
259	Samalkot Junction	1899
260	Samastipur Junction	1874 (Samastipur–Darbhanga Metre Gauge)
261	Sambalpur	1963
262	Sasaram Junction	1914 (Arrah–Sasaram)
263	Satna	1870 (Howrah–Allahabad–Mumbai Main Line)
264	Saugor	1923 (Bina–Katni Line)

S. No.	Station	Date of Establishment
265	Sawai Madhopur	1907
266	Secunderabad	1874
267	Shahganj	1972-74
268	Shahjahanpur	1873 (Lucknow–Moradabad line)
269	Shalimar	1905 (rebuilt in 2000)
270	Shegaon	1867 (Nagpur–Bhusawal section)
271	Shimoga Town	1931
272	Shoranur Junction	1862
273	Silchar	1898
274	Siliguri Junction	1949
275	Singrauli	1982
276	Sirhind Junction	1870
277	Siwan Junction	1909 (Varanasi–Chhapra Line)
278	Sonipat	1889 (Delhi–Kalka Line)
279	Sri Ganganagar	1923-32
280	Srikakulam Road	1893-96
281	Sathyasai Prasanthi Nilayam	2000
282	Sultanpur	1872 (Varanasi–Lucknow via Sultanpur–Jaunpur main line)
283	Suratgarh	1901-1902 (Jodhpur–Bathinda line)
284	Surendranagar	1872
285	Tadepalligudem	1916
286	Tambaram	1931 (Chennai Beach–Tambaram section of the Chennai Suburban Railway Network)
287	Tenali Junction	1899
288	Thalassery	1901
289	Thanjavur Junction	1880
290	Tinsukia	1903 (ABR line from Chittagong to Lumding to Tinsukia)
291	Tiruchchirappalli Junction	1859
292	Tirunelveli Junction	1893

S. No.	Station	Date of Establishment
293	Tiruppur	1983 (<i>Chennai-Palakkad Broad Gauge Line</i>)
294	Tirur	1861
295	Tiruvalla	1956 (<i>Ernakulam-Kottayam-Kayamkulam line</i>)
296	Tundla	1866
297	Tuni	1893-1896 (<i>Visakhapatnam-Vijayawada section of Howrah-Chennai main line</i>)
298	Tuticorin	1874
299	Udaipur City (Tripura)	2016
300	Udhampur	2005
301	Udhana	1870 (<i>Udhna-Jalgaon Line; Howrah-Allahabad-Mumbai Main Line</i>)
302	Ujjain	1876
303	Unnao	1867
304	Vadakara	1907
305	Valsad	1925
306	Vapi	1870 (<i>Ahmedabad-Mumbai Main Line</i>)
307	Vasco-Da-Gama	1886 (<i>Marmagao and Vasco Metre Gauge</i>)
308	Veraval	1897
309	Vidisha	1889 (<i>Agra-Bhopal Section</i>)
310	Villupuram Junction	1879
311	Viramgam	1871
312	Virudhunagar Junction	1904 (<i>Kollam-Sengottai Chord Line</i>)
313	Vizianagaram	1898-1900
314	Warangal	1889 (<i>Kazipet-Vijayawada section</i>)
315	Wardha	1867
316	Yadgir	1871 (<i>Guntakal- Wadi (Excl) line</i>)
317	Agra Cantt	1904
318	Ahmedabad	1866
319	Ajmer	(1951) <i>Ajmer Railway division</i>

S. No.	Station	Date of Establishment
320	Ambala Cantonment Junction	1891
321	Andheri	1928
322	Ballarshah	1929
323	Bandra Terminus	1990
324	Bangalore City	1915-18 (<i>Mysore State Railway</i>)
325	Bareilly	1873
326	Bhagalpur	1861
327	Bhopal	1910
328	Bhubaneswar	1896
329	Bilaspur Junction	1889
330	Borivali	1928 (<i>Western line from Churchgate to Borivali</i>)
331	Chennai Central	1873
332	Chennai Egmore	1905
333	Chhapra Junction	1909 (<i>Varanasi Chhapra Line</i>)
334	Coimbatore Junction	1861
335	Chhatrapati Shivaji Terminus (CSTM)	1853-88
336	Dadar	1868
337	Darbhanga Junction	1875
338	Daund	1870
339	Dehradun	1899
340	Delhi Junction	1864 (<i>rebuilt in 1903</i>)
341	Dhanbad Junction	1880-94
342	Gaya Junction	1879
343	Gorakhpur Junction	1886-1930
344	Gulbarga	1871
345	Guwahati	1900
346	Hazrat Nizamuddin	1859 (<i>Northern Railway zone</i>)
347	Haridwar	1886
348	Howrah	1854
349	Hyderabad Deccan (Nampally)	1907; (1870 <i>construction of Railway linking Hyderabad to GIPR</i>)
350	Indore	1893 (<i>rebuilt in 1921</i>)

S. No.	Station	Date of Establishment
351	Jabalpur	1867-70 (Allahabad - Jabalpur branch)
352	Jaipur	1895
353	Jalandhar City	1864
354	Jammu Tawi	1897 (Old Jammu; reopened in 1975)
355	Jhansi	1880
356	Jodhpur	1885
357	Jolarpettai Junction	1861 (Jolarpettai-Shoranur line) 1864 (Jolarpettai-Bangalore)
358	Kachiguda	1916
359	Kalyan	1954
360	Kanpur Central	1930
361	Kharagpur	1898-99
362	Kozhikode	1888
363	Lokmanya Tilak Terminal	1991
364	Ludhiana	1864-1901
365	Madurai Junction	1859
366	Mathura Junction	1904
367	Mughalsarai Junction	1860-62
368	Mumbai Central (Main)	1930
369	Muzaffarpur Junction	1886

S. No.	Station	Date of Establishment
370	Nasik Road	1866
371	New Delhi	1926
372	New Jalpaiguri	1960
373	Patna Junction	1862
374	Pune	1858
375	Puri	1897
376	Raipur	1888
377	Rajkot	1890
378	Sealdah	1862-69
379	Shri Mata Vaishno Devi Katra	2014
380	Solapur	1860
381	Tatanagar	1910
382	Thane	1853
383	Thrissur	1902
384	Thiruvananthapuram Central	1931
385	Vadodara	1861
386	Varanasi Junction	1862 (first line from Howrah-Varanasi)
387	Vijayawada	1888
388	Visakhapatnam (erstwhile Waltair)	1896
389	Yeshwantpur	1892 (Yeshwantpur-Doddaballapur MG)

Section 1.2: Summary of Findings

Establishment dates for 389 stations have been ascertained through credible sources. Stations, whose specific date of establishment was not found, the lines that the station is part of (main lines, sections or branches), were ascertained. All the stations provide information on incremental growth of the Indian Railways.

Table 3: Summary of Findings

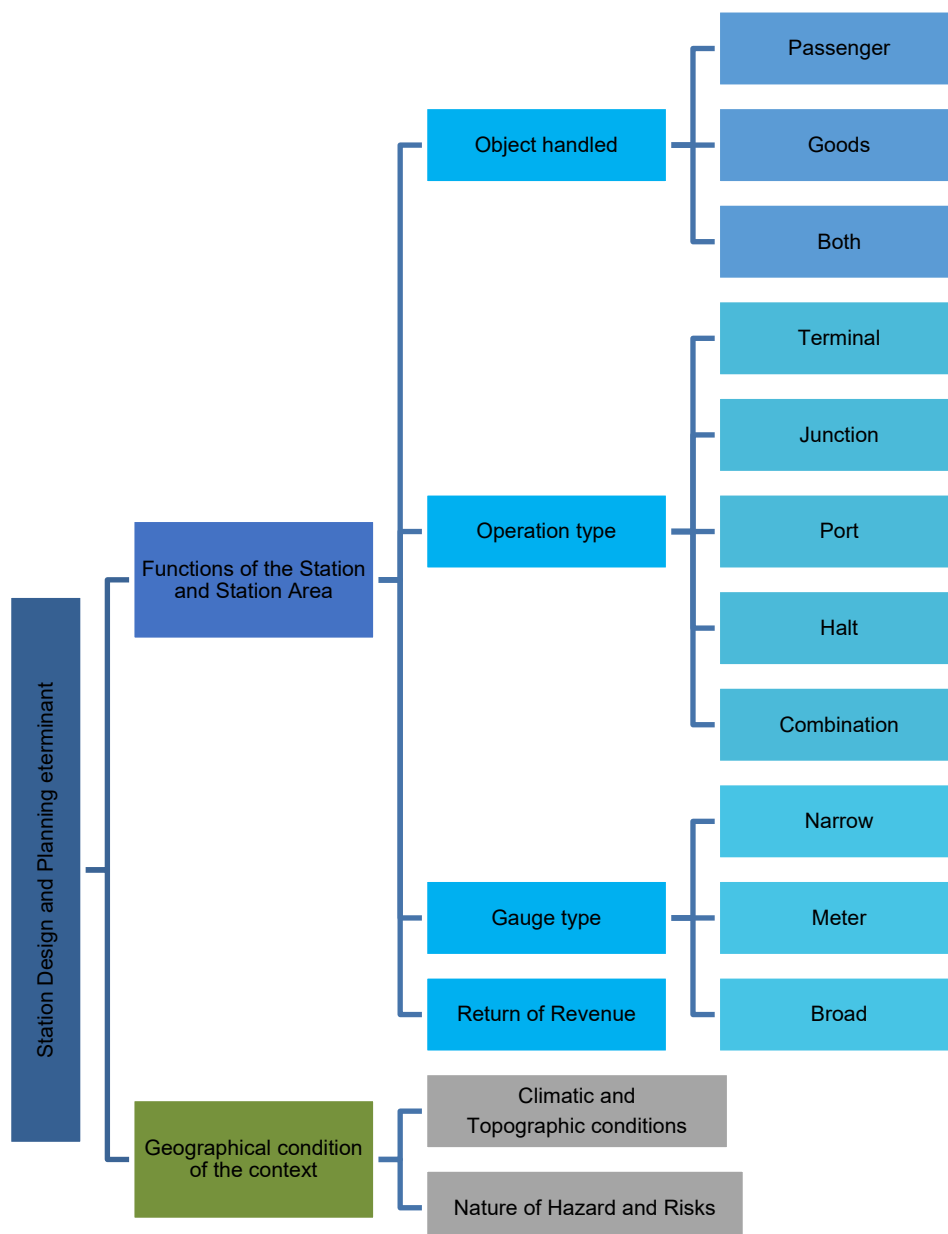
Date of establishment	No.	%	65.6% Station Buildings and Station Areas owned by the Indian Railways are Historic in nature, dating back to the first generation of establishment.
1845-1860	22	5.7%	
1861-1900	229	58.9%	
1901-1947	95	24.4%	
1947-1991	34	8.7%	
1992-2020	9	2.3%	

Chapter 2: Qualifying Historic Railway Station

Section 2.1: Qualifying Indian Railway Station Architecture and Planning Properties

To identify and qualify the properties of Railway Heritage Asset (RHA), a study of the Indian Railways stations constructed since the 1850s was done to understand the original planning and design principles, functions, parts of a Station and within their respective geographical conditions. (Figure 1: Station Design and Planning Determinants) below shows how functionality and geography have determined Layout Planning and design of the Station Building(s) and Station Areas. It is the permutation and combination of these parameters that characterize, and determine the land use surface and utilization patterns, road network, among other facets of a Railway Station and Station Area.

Figure 1: Station Design and Planning Determinants



2.1.1. Functional Classification of Stations

The four (4) functional Categorization and corresponding Design Inputs are:

Type 01 – Passenger or Goods: Classification based on primary objects of handling, i.e. Passenger or Goods, or both. Most of the Goods Stations were contiguous to wholesale or retail areas of cities - and the interface between the Railway and city had infrastructure for transaction, loading-unloading and auction areas, storage, custom houses and other offices, and sometimes ports or other features that supported trade. Over time, several of these Stations were provided with infrastructure related to passengers on need-basis.

Pure Passenger stations were far and few, as the Railways were primarily meant to transfer goods, the military, and thereafter, passengers. Some of the key facilities allocated for passengers included retiring rooms, provision for water and refreshments, and furniture on platforms within the Station Building. In the interface between the city and the Railway station, some key passenger facilities included an impressive public space, bazaars, entertainment facilities (like cinemas and circus) and multi-modal integration.

Type 02 – Terminals, Junctions, Ports and Halts: Terminal and Junction Railway stations could exist as mutually stand-alone, or in a combination with each other. In terms of hierarchy of importance and network density, Junctions were the most important, followed by Terminals, and then Halts. Port-Junctions (Howrah station), or Port-Terminals (Chhatrapati Shivaji Maharaj Terminal, Mumbai), or Port-Station (Marmugao) were at the apex of its international network, and still are the most promising in terms of Value-Capture - whereas Terminal stations have a deeper connect with the city core and major infrastructure. The presence of institutions - banks, ports, municipalities, City-Trust offices, revenue offices, wholesale markets and other anchor facilities - are the key indicators of the importance of a Railway station and Station Area. The Halt Stations were lowest in the hierarchy, where a few Passenger trains stopped for a short duration.

Type 03 – Narrow, Broad and Metre Gauge: This categorization has a direct effect on the design of Station Building and its operational area. Upgrading from a Narrow to Broad or Metre Gauge, or laying of additional tracks, may require an offset of Station Building onto the land adjacent to it, or its extension. In either case, the position and movement of passengers - away from the Station Building towards the city - has a direct bearing on the Station Building, spaces and location of supporting infrastructure. Hence, this was factored in while drafting the Working Policy and Guidebook.

Type 04 – A to F¹: Categorization of stations A to F by the Ministry of Indian Railways, GoI is based on annual passenger earnings. It is an indicator of passenger traffic, and the need for a proportionate quantum and scale of passenger amenities - Minimum Essential, Recommended and Desirable amenities).

2.1.2. Geographic Classification of Stations

Geographic distribution of Station Areas provided the following two Design Inputs:

Type 01: Design response to Climatic and Topographic conditions demonstrated the adoption of local ornamental features, material and passive energy management techniques by the British to important international architectural forms that shaped Station Building and its contiguous areas.

Type 02: Design response to Natural hazards, risks, and disasters conditions.

¹ Before 2017, the criteria of categorization for Indian Railway Stations were based on the type of their functions – and were classified as Goods, Passenger or Military stations. As passenger traffic increased with the growing connectivity of the Railway network and ease of travel, this increased the demand for passenger amenities.

To give due consideration to the planning of a Station Area from the perspective of passenger footfall, earnings and strategic importance, Railway stations were re-categorized into seven categories: A, A1, B, C, D, E and F. However, since 2017-18, Railway stations are now classified into three groups based on passenger footfall – Non-Suburban (NSG), Suburban (SG) and Halt stations (HG). The performance of stations' classification shall be reassessed after 2022-23.

Section 2.2: Evolution of the Indian Railway Station and Station Area Design

2.2.1. Evolution of Architectural and Layout Design Principles

Following a basic classification of design determinants, research was conducted to study how Layout Planning, Architecture, Aspects of management, and Monetization evolved over time. The focus was to understand how and why different functions were added, upgraded, abandoned or repurposed from time to time - and how technology and socio-economic-political conditions co-evolved the operational and non-operational parts of a Railway station and Station Precinct. What is important to note is how the Codes, Norms, Safety and Design standards, Laws, System of ownership and Leasing of land, Monetization et al, have evolved and manifested in the Built-Form over time.

Additionally, it also enabled the identification of the complementary relation between the Railway Station Precinct and the city, developed an approach to study and conduct field work for drafting the Working Policy and Guidebook, and to assist IRSDC/Technical Consultants in Upgradation works.

(Table 5: *Chronological Evolution of Design Principles of Indian Railway Stations and Station Areas*) below provides information on design evolution of Indian Railway station and Station Area, and Section 2.2.2. (Table 6: *Distribution of immovable Railway Heritage Asset and Heritage Asset in Station and Station Area*) is a list of facilities and amenities that were integral to the Railway System.

Table 4: Chronological Evolution of Design Principles of Indian Railway Stations and Station Areas

Date	Design and Layout Characteristics
Pre-1857	
1850	The architectural style of the first Railway stations built in India in the early 1850s was similar to that of the European stations in 1830. These had simple wooden beams and terracotta roofs, and the Stations seemed to be a part of the landscape. Local materials were used for the Station Building, reminiscent of villages and small town structures. Descriptions, mostly in the form of paintings and personal diaries, depict crowds assembled in attitudes of ease and mingling freely. They were perhaps suggestive of the aspirations of the promoters of Railway stations – as a new and inclusive public sphere of commerce. (<i>Bear, Chapter 2: An Indian Traveling Public, 1850-1900. 2007</i>)
	● Railways in India produced a distinct series of public offices, of which many were international establishments. ● Railways owned all land within the fences and the boundary marks -- and could exclude from their premises "persons not having any business on such premises," and could "impose any terms they consider proper as conditions for admittance." This rule, however, did not apply to platforms -- as these were not owned by the Railways then. (<i>Bear, Chapter 2: An Indian Traveling Public, 1850-1900. 2007</i>)
1854	● Railway Stations were classified into four groups based on Purpose, Traffic type and Volume, and the Proportion of European and Indian passengers. Some of the high-capacity Railway stations of today, such as Howrah station, was just a tin shed with a small booking office, and a single platform. (<i>IRFCA - The Indian Railways Fan Club 2010-2019</i>)
1857- 1900	
	Salient features of the Railway colonies in the given era. ● The layout of Railway colonies for European and Eurasian workers were: ○ Planned as self-sustained areas having water supply, municipality, bottling plants and bakeries. ○ Public spaces were designed based on hierarchy (of rank) of officials. Bungalows with large gardens were provided to the senior officers. ○ Single story cottages and double-story flats were built for drivers and guards, closer to the Railway stations. ● Six types of houses built with varying facilities, and allocated as per rank. ○ Type 1 were the low-level barrack houses with a room, veranda and bathroom. ○ Type 2 were allotted for skilled workshop employees. ○ Type 3 were for junior supervisors, technical positions, junior locomotive drivers, etc.

Date	Design and Layout Characteristics
	○ Type 4 for senior supervisors, drivers, staff nurses, probationary officers, office superintendents, and Station masters. ○ Type 5 were for administrative grade officers with 10 years of experience. ○ Type 6 were for those with more than 20 years of service. ● Only 50% of the Railway staff were housed in the Railway colony. ● Railway Volunteers ground was used for drill practices, to defend the colony in times of emergency. ● Own components of the Railway Station Area included primary schools, guest houses, offices, workshops (for overhauling locomotives, passenger cars and freight cars), and separate workshops for women (for specialized components of locomotives) and official liquor shops. Other facilities found inside the Railway land included Sports tracks and arena, Railway institute, Masonic lodge, churches, hospitals, cemetery, etc. ● Functions of certain building spaces have also changed across time -- e.g. in Kharagpur, the ground floor of Railway Institute has been converted into a cinema hall. (<i>Bear 2007</i>)
1854-59	● During this period, European public spaces were added. ● Cottages instead of barracks were assigned to two bachelors or to married officers. ● Higher rents were collected from these cottages. ● The ventilation design was typical to that done in Britain. (<i>Bear, Chapter 3: Governing the Railway Family, 1860-1900. 2007</i>)
1857	After the First War of Independence in 1857, the design of the Indian Railway stations changed -- from a place of commerce to a defensible structure, to provide refuge to British officers and families at times of civil war. Design recommendations were approved by the Lieutenant Governor of Bengal J.P. Grant, and subsequently became the standard design norm (<i>Bear, Chapter 2: An Indian Traveling Public, 1850-1900. 2007</i>).
1859	● To make Railway stations more defensible, Viceroy of India Lord Canning ruled three principles to be mandatory for construction of Railway stations: ○ All Railway stations to primarily allow traffic movement -- but no facilities that lower the speed or impair movement to be allowed. ○ Building to be provided with simple and inexpensive facilities. ○ All Railway stations' plans to be reviewed by the Government of India for traffic and defence compliances. ● Features of a defensible Railway station: ○ Defensive ditches in front of the six-foot enclosing wall with iron spikes on top. ○ Flat roofed buildings with kypes (Old English; also written as <i>keeps</i> -- fortified tower or enclosure) to afford cross and flanking fire. ○ Location of new stations to be such that they fulfil emergency and military functions. ○ Existing stations be upgraded by constructing sheltered communications between buildings, and keeps/towers be added to existing structures. ○ Loopholes and palisading gates across the Railways, with sufficiently large openings to allow the trains running in and out - and capable of being closed by a proper loop-holed gate - were added to the proposed tower and iron <i>chevaux de frise</i> (row of spikes or broken glass set as an obstacle on top of a wall). ○ Aesthetics of an Indian Railway station to convey an impression of safety. (<i>Bear, Chapter 2: An Indian Traveling Public, 1850-1900. 2007</i>)
1860	● Provision of passenger amenities such as toilets, lights, etc. were first introduced in the first-class carriages, and then the lower classes. (<i>IRFCA - Indian Railways Fan Club, 2010-2019</i>) ● Leisure facilities were provided in the form of Railway institutes and swimming pools for recreation, and to prevent alcoholism. (<i>Bear, Chapter 3: Governing the Railway Family, 1860-1900. 2007</i>)
1865	● There was a conscious shift in design sensibility and approach to Station design to retrieve public interest in the Station. (<i>Bear, Chapter Two: An Indian Traveling Public, 1850-1900. 2007</i>) ● Institutes like the Lahore Railway Mechanics Institute were constructed along large Stations to keep the subordinates' staff healthy and engaged -- and prevent social issues related to idleness and loitering in public spaces of a Railway colony (<i>Bear, Chapter 3: Governing the Railway Family, 1860-1900. 2007</i>)

Date	Design and Layout Characteristics
1867	Hill sanitarium for recuperation was established for subordinate staff of the East Indian Railway at Landour, and other places that were climatically similar to Britain (<i>Bear, Chapter 3: Governing the Railway Family, 1860-1900. 2007</i>)
1850-1890	• Trains became a levelling public space, creating new forces and social reversals that catalyzed growth of civic life, and synergized associations that formed the basis for joint stock companies. • Railway accidents became a symptom of the potential crises of capitalism. Equities were created as a measurable and insurable buffer against such hazards. • Station architecture and waiting rooms were the transition between trains (an industrial space) and the city • Technological and commercial spaces emerged, and traditional domestic railway carriages were added. • Lock-ups and military outposts were built to the Stations. (<i>Bear, Chapter 2: An Indian Traveling Public, 1850-1900. 2007</i>)
1866-68	• Defensive features became standard inclusions to Railway station architecture, especially in cantonment towns like Ranchi, Jabalpur, Allahabad et al. • Intimidating and confrontational effects of defensive features were reduced by providing recreational spaces, and a new architectural style emerged – e.g., Allahabad Railway station, which was an extension of East India Railway (EIR). • Public facades of small and medium size Stations started including local (Indian) architectural features reminiscent of mosques, palaces and temples-- e.g., incorporation of domes in EIR Lucknow station. Bigger stations – e.g., Madras (1868) and Howrah (1890) -- were European, primarily Victorian Gothic and Italian in nature (<i>Bear, Chapter Two: An Indian Traveling Public, 1850-1900. 2007</i>). • Station became a local destination -- a public space with definitive aesthetics.
1869	In 1869s, lock-ups were constructed in Railway stations to confine Eurasian and European passengers who were found to be vagrants or inebriated (<i>Bear, Chapter Two: An Indian Traveling Public, 1850-1900. 2007</i>).
1874	• Sanitary Police was introduced in EIR Colonies for enforcement of sanitary regulation. • Security of settlement was made against encroachment of bazaars, worker colonies et al. • When bazaars came too close to the Railway colonies, land was purchased to create a <i>sanitary zone</i> around the settlement. • Employees were encouraged to remove all native vegetations around their residences, and plant imported seeds to reproduce British sceneries, life and morals (<i>Bear, Chapter Three: Governing the Railway Family, 1860-1900. 2007</i>).
1876	• The following spaces were included as facilities in Railway estates: ○ Brick houses ○ Institutes ○ Schools ○ Recreational grounds ○ Gardens ○ Libraries ○ Cooperative stores ○ Refreshment rooms ○ Hospitals ○ Churches ○ Billiard rooms ○ Swimming pools • Elementary and higher-level boarding schools of Railways were added in Barrackpore, Rampur, Howrah, Patna, Jabalpur and Danapur (<i>old name Dinapore</i>). (<i>Bear, Chapter 3: Governing the Railway Family, 1860-1900. 2007</i>)
1878 -	• Huts with courtyard and screen walls were introduced at Railway stations for Indian Station masters.
1887	• Space was also allotted to workers to construct their own huts (<i>Bear, Chapter 3: Governing the Railway Family, 1860-1900. 2007</i>).
1890	In the 1890s, during the plague, Railway platforms became control sites (<i>Bear, Chapter 2: An Indian Traveling Public, 1850-1900. 2007</i>)
1900-1947	
	• Public spaces of the Railway still maintained the distinction between Indian society and the Imperialists. • Segregated <i>serais</i> (waiting and retiring rooms) were built in most of the major stations for Hindus and Muslims. • Separate retiring rooms for women next to <i>serais</i> were attached to the Stations (<i>Bear, Chapter 2: An Indian Traveling Public, 1850-1900. 2007</i>)

Date	Design and Layout Characteristics		
1928	In March 1928, 'Faidamand Panchayat' (Welfare Council) were formed in all the divisions of EIR to address matters of general interest, complaints and grievances. (Bear, Chapter 5: An Economy of Suffering, The Ethics of Popular Nationalism in Petitions from Railway Workers, 1930-1947. 2007)		
	1947-2019		
	● Large and improved waiting sheds were constructed to increase the comfort and convenience of third-class passengers, in the first quarter of the 20th century. ● At important passenger stations, the height of platforms was lowered (Khosla 1988).		
	● A minimum standard of amenities was laid down for every station -- for a period of 30 years:		
	◆ Waiting hall ◆ Pucca platform surface ◆ Benches ◆ Shady trees on platforms	◆ Improved latrines ◆ Adequate illumination ◆ Drinking water ◆ Booking facilities	◆ Retiring rooms for third-class passengers in 1954 (Khosla 1988).
	● Segregated entrances and exits for upper class passengers were dismantled. (Khosla 1988)		

2.2.2. Types of RHA and HA associated with Railway System

(Table 6: *Distribution of immovable Railway Heritage Asset and Heritage Asset in Station and Station Area*) is a list of immovable and Associated RHA and HA that were, and continue to be, an integral part of the Railway system. Such Assets are likely to be found as a part of the Railway station, Station Area and Historic Environment. They show the interdependence of a city with the Station – and together comprise the value of Railway Heritage. Moreover, the density and diversity of RHA may also be used as an indicator of importance of a Railway station and Station Area - and also be used as a ready catchment that can be productively leveraged. (Table 6: *Distribution of immovable Railway Heritage Asset and Heritage Asset in Station and Station Area*) shall be used to establish a Statement of significance, Define the scope of work, and possibly Converge with local area planning for a holistic presentation of Heritage Asset.

Table 5: Distribution of immovable Railway Heritage Asset and Heritage Asset in Station and Station Area

Railway HA (Assets related to Railway operations and services. These are owned by the Railways)	HA that supported, or drew support, from the Railway System
A-1 - Operational Areas - Station buildings with amenities for Officer, including retiring rooms for Officers - Offices for Railways functioning administration including those for Security, Archives and Record Room, Vaults, Signaling, - Railway Workshops, Depots and Sheds , including areas with Turntables and Sick Lines, Coach Parking - Railway (and Shipping) yards - Goods shed, Warehouses and Platform - Railway mail service area, Post Office, tunnel and supporting facilities - Parcel platform, siding, Terminal and office - Godowns, Store Depot and Store Houses.	B-1- Surrounding uses and infrastructure Commercial uses: - Mall, Bazaars, City and Wholesale markets and Cooperative stores - Guest houses, Hotels, Hostels - Refreshment room and Restaurants Residential areas Gateways/city gateways Institutional use - Institute - Libraries - Schools, colleges and Universities Public and semipublic - Government and Private offices - Courts - Post office or General Post office - Banks and Stock companies
A-2 - Non-Operational Assets Railway Institutes for Training and Engineering colleges, Schools, Hospitals, Sanitarium	

Railway HA (<i>Assets related to Railway operations and services. These are owned by the Railways</i>)	HA that supported, or drew support, from the Railway System
2. Railway Printing press 3. Railway officer's club, Rest and Guest houses 4. Security infrastructure including Railway Protection Force post, Military outposts, Jail and lockups, Railway-volunteers ground 5. Official liquor shops 6. Serais, Guest houses and Yatri Nivas 7. Supporting infrastructure like Railway Stable, Railway water tank, Canals 8. Masonic lodges, Churches, Cemetery 9. Sports tracks and arena/ stadium, Swimming baths, Gymkhana 10. Recreation and supporting amenities including Theatre, Cinema hall, Library, Reading room, Grounds, Gardens, Bakeries 11. Railway housing colony, Barracks, Cottages	e) Hospitals , Sanitarium 6. Religious: Churches, Temples, Mosques, etc. 7. Water Infrastructure: a) Ghats b) Canals c) Dyke (for flood control) d) Embankments e) Water tanks 8. Industries: a) Workshop for wagon and rolling stock manufacturing b) Ship repair, engineering, dock and yards c) Powerhouses d) Godowns, Warehouses and Store depots e) Jute mills f) Oil refineries 9. Public spaces and recreation a) Gardens and Parks b) Recreational fair or mela, Circus grounds c) Racecourse, Gymkhana and Swimming baths 10. Defense and security: a) Military or cantonment areas b) Barracks c) Sepoy and Police lines 11. Transportation: a) Bridges, Tunnels, Subways b) Passenger and Goods (import and export) jetty, Ferry transport c) Bus terminus and Bus stop d) Tramways and Tram terminus e) Tonga services
A-3 - Passenger Accessible Station Area	
1. Booking office and facilities for tourists 2. Pucca platform 3. Waiting hall or shed 4. Man's and Women's waiting room, Retiring rooms, sleeping accommodation 5. Benches, Drinking water, Refreshment stalls, Eateries 6. Cloak room 7. A.H. Wheeler Kiosks 8. Railway Museum	
A-4 - Transportation	
1. Railway jetty, port, steamer services 2. Subways 3. Railway bridges 4. Under passes and Subways 5. Station roads 6. Subways 7. Tunnels	

Section 2.3: Categorizing of Railway Stations and Station Areas (for Field Work)

A sample of 40 Railway stations representing diversity and complexity of Station design, Function and Station Area Layout were selected from (Table 2: Dating Railway Stations selected for Redevelopment). These were then compared to identify six (6) cases that had shown maximum iteration -- and hence selected for case studies. The selected Railway stations were Howrah, Dibrugarh (Town), Jodhpur, Shimla, Egmore (Chennai) and Thiruvananthapuram (cells marked in green). Refer to *Table 7: Categorization and Comparison of Railway Station Areas* for categorization and comparison of Railway stations and Station Areas, and Appendix I for Case Studies.

Table 6: Categorization and Comparison of Railway Station Areas

Legend														
Climate Classification								Risk Types						
1 - Montane 2 -Humid Subtropical 3 -Tropical Wet and Dry			4 -Tropical Wet 5 -Semi-Arid 6 -Arid					F - Flood C - Cyclone E(n) - Earthquake, where (n) = Intensity zone LS - Landslide						
'A, A1' Railway stations' classification based on revenue potential.														
S. No.	Station Name	Time-line	Function of Station							Geography and Climate				Types of Risk
			Junction	Halt	Terminal	Port	Goods (G)/ Passenger (P)	A, A1	Narrow (N)/ Broad (B)/Metre (M) Gauge	Mountain/Elevated	Coastal	Plain	Desert	Natural/ Man-made risks
1	Howrah	1854	Y		Y	Y	P	A1	B, M			3		E(III), C, F
2	Allahabad	1859	Y				P	A1	B			2		E(II)
3	Kanpur Central	1859-1930	Y				P	A1	B					E(III), F
4	Amritsar	1862	Y				P	A1	B			2		E(IV), F
5	Sealdah	1862	Y		Y		P	A1	B			3		E(III), C, F
6	Mughalsarai	1862	Y				P	A1	B			2		E(III)
7	Delhi Jn. (Old Delhi)	1864	Y				P	A1	B, M			5		E(IV), F
8	Nagpur	1867	Y				P, G	A1	B, N			3		E(II)
9	Mysore	1870	Y				P	A	B			5		E(II)
10	Secundrabad	1874	Y		Y		P	A1	B			3		E(II)
11	Dibrugarh Town	1883	Y		Y		P	A	B			3		E(V), F, LS
12	Jodhpur	1882-1885	Y				P	A1	M, B				6	E(II)
13	CST	1878-1888			Y	Y	P, G	A1	B		3			E(III), C
14	Marmagao*	1888				Y	P		B		4			E(III), C
15	Morbi	1890					P, G		B			5		E(III)
16	Tenali	1899	Y				P	A	B		3			E(III), C, F
17	Barog	1901		Y			P		N	2				E(IV), LS
18	Shimla	1903			Y		P		N	2				E(IV), LS
19	Hospet	1905	Y				P	A	B			5		E(II)
20	Chennai Egmore	1905			Y		P	A1	B		3			E(III), C
21	Hyderabad	1907			Y		P	A1	B			3		E(II)
22	Ranchi	1908	Y				P	A	B			2		E(II)
23	Bhopal Jn.	1884-1910	Y				P	A1	B			2		E(II)
24	Tatanagar Jamshedpur	1910	Y				P	A1	B			2		E(II)
25	Lucknow Jn.	1914	Y				P	A1	B			2		E(III), F
26	Jaisalmer	1921			Y		P	A1	B				6	E(III)
27	Pune Jn.	1858-1925	Y				P	A1	B			3		E(III)

28	Thiruvananthapuram	1931	Y		Y		P	A1	B, M			4		E(III), C, F
29	Bareilly	1964	Y				P	A1	B			2		E(IV), F
30	Bangalore City	1992	Y				P	A1	B			5		E(II)
31	Udupi	1993					P		B			2		E(III)
32	Khidirpur	1995		Y		Y	G		B			3		E(III), C
33	Shalimar (Shibpur)	2000			Y		P, G	A	B			3		E(III)
34	Jabalpur	1852-1867	Y				P	A1	B			2		E(III)
35	Surat	1852-60					P	A1	B			5		E(III), C
36	Gwalior	1881-1909	Y				P	A1	B, N			5		E(II)
37	Digboi	1882-1900					P, G		B			3		E(V)
38	Lower Haflong	1882-1900					P, G*		B	3				E(V), LS
39	Chanakyapuri Delhi						P					5		E(IV)
40	Garden Reach				Y	Y	G					3		E(III), C

Chapter 3: Field Work and Case Studies

Section 3.1: Field Work

From forty (40) Railway Stations (see *Table 7: Categorization and Comparison of Railway Station Areas*), six (6) were selected for field work undertaken to know (i) the properties of the Station and Station Area, and (ii) to identify the kinds of studies needed for Commercial Development of Railway Stations and Station Areas. The parameters were:

- Qualification of and correlation between Railway Heritage Asset (RHA), Heritage Asset (HA).
- Architectonics of Railway station and Station Area.
- Quality of maintenance, management, and State of Conservation of RHA.
- Existing urban management challenges affecting RHA, HA and overall user experience.
- Prospects of future upgradation.
- Kinds of studies required to be undertaken to enable Upgradation and Redevelopment work.

Table 7: Key Observations from Field Work and Pointers for Working Policy and Guidelines

Field Observation	Applications in Working Policy and Guidelines
3.1.1 Site and Area Level Observations	
i. Station Siting	
Most stations built before 1870, were under the Old Guarantee System, and were located pursuing strategic interest i.e. either convenient transfer of goods or military movement or both, and besides technological viability.	All Railway Station had a network, that ranged from international to local scale that are integral to establish the socio-economic value, and the net worth of a Station and Station Area.
Railway stations built after 1870s were construction and management by the State, were financed through New Guarantee System, and were sited based on returns from investments.	This is a tool to capture the evolution of the network, assess the feasibility, define a productive catchment for Land Value Capture and develop a Grade for the Stations and Station areas, in harmony with Ministry of Railways' recent classification of Stations.
ii. Land Value Capture	
Station siting has always capitalized from resources in its context and from developing an ecosystem of services at adjoining areas and settlements.	Project planning shall include the existing and prospective ecosystem of services in value creation.
Stations also added assets like canals, lakes, wetlands, salt mines, ghats etc. to make them accessible.	Irrespective of ownership, Policy and Guidelines dedicated to assets that are a part of the ecosystem, are required. This is essential for complete Land Value Capture.
iii. Evolution of Context	
Station Precincts are characteristically Mixed-Use and High-density areas with affordable guesthouses, and extended facilities supporting Railway and commercial Land Use of different scales.	The Working Policy and Guidelines for Railway Heritage Assets should factor in the inherent evolutionary nature of Station Precincts.
Precincts, in most cases, developed into high footfall zones having transit modes (with or without facilities) that connect the Railway station to the region.	The approach to Working Policy and Guidelines for Railway Heritage Assets, shall facilitate changes without compromising integrity of Historic properties. So, it shall be a tool to standardize technically correct practices -- and not control and avoid future growth.
iv. Building and Land Use in and around the Station Precinct	

Field Observation	Applications in Working Policy and Guidelines
Station Building and Area had diverse Building and Land Uses, depending on the initial prospecting of the Station Land in the mid-19th century, and later revised via master planning exercises. All Railway Station Precincts studied as part of this assignment have been found to be of Mixed-Use nature, with a very high frequency of change.	All Railway Station Precincts have to be planned for optimized high density mixed-use. Working Policy and Guidelines for Railway Heritage Assets shall provide objective tools to assess Impact of proposed development, regulate Indicators that bear impact and, most importantly, adopt an Avoided Impact method to develop compatible and adaptive project proposals.
v. Public Spaces	
Most large and medium Railway stations were provided with designed public spaces attached to the Station Building. This design element was a typical part of large public (assembly) buildings of the 18th -19th century. These were intended to provide an accentuated (public) frontage, and hence present the building to the public at-large. As an interface between the Railway station and the city, such public spaces were multipurpose in nature, viz.: • Directed towards amenities such as inns, lodges, <i>serais</i>, hotels, transit hubs; • Provided for city-level recreational space; • Allowed spill-over, and hence increased effective capacity of the Railway station and viability of its Precinct; • Assisted crowd management; and • At times of disaster, allowed congregation and distribution of aid. Most of such spaces have been converted into parking areas, or transformed into carriageways. The few that remain are not accessible, and/or have been encroached upon.	Reclaiming, protecting and preventing conversion of public spaces abutting Railway Stations shall be mandatory. Public spaces within Railway Land shall be without boundary walls. The planned active and passive use shall be such that the public space can still accommodate spill over from Station premises, and assist in crowd and disaster management.
vi. Road Network, Public Transport and Multi Modal Integration	
Stations were sited at locations where important routes converged. The network responded to fluctuating demands of the Railway services, accessibility and availability of public transport, manner of transport planning and traffic management of the city and Station Area, and the effect of introduction of airports. It has resulted in high congestion -- and in certain cases isolated the Railway station and Station Area, creating thoroughfares wedged between the city and the Railway. The routing of traffic and the manner in which public transport has been facilitated -- or the lack thereof - has significantly affected Station Area management, user experience and usability.	Management of connectivity is critical for Land Value Capture and for Station Areas, together to provide necessary user experience. Measures to manage shall range from reducing congestion to demand management -- and shifting focus from vehicular movement towards mobility.

3.1.2 Building Level Observations

These are observations directly related to Conservation and Management of RHA.

Site Observations	Application in Policy and Guidelines
i. Building Information	
No documentation system and guidelines for managing building information were shared officially. Hence, its qualitative assessment has not been undertaken ² . To substitute this gap, a study was conducted of the on-going consultancy processes, and the State of Conservation of Railway stations and station Area.	To ensure inconsistency in quality of work and sensitivity in approaching Historic Stations, Station Areas and its moveable asset, Maintenance, upgradation work, allocation of new infrastructure et al, are done with little consideration to Heritage. Technically sound Conservation of moveable heritage is also required.
ii. Standardizing Assessments, Maintenance, and Management	
The Railway Charter provides a general direction on what <i>should</i> be done with the 24 structures and 10 bridges that are listed to be protected. But application of the criteria that distinguishes the listed properties would put more than 70% of all Indian Railway stations in the list of Heritage Stations in Continued Use (Table 2: Dating Railway Stations selected for Redevelopment). A survey of the existing rules, norms and regulations for execution of work shows that very little detail of the technical procedures get recorded in the maintenance, repair, inspection and monitoring process. The field survey corroborates these observations – demonstrated by the lack of consistency in the quality of maintenance, state of Conservation, and that of retrofitting and upgradation of the Railway stations.	The Policy and Guidelines shall: ● generate a Graded Set of Standards applicable to protected and unprotected Historic Assets; ● standardize the Sequence and Quality of Procedures to be followed; ● standardize Skills required for Conservation; and ● provide Standard Protocols to identify compatible and adaptive reuse.
iii. Gaps in Existing Regulations and Norms	
Existing norms applicable to RHA have a ‘control’ bias. These norms are intended to preserve HA as monuments. It does not, however, provide technical standards or directives based on which Asset owners may self-regulate and learn to reuse Historic structures. The norms applicable to city level HA are based on ‘control of development’ -- and do not provide for a guided use/reuse in the future. It leaves comparability as an open-ended and subjective decision, without providing for its technical standards and limiting conditions.	The Policy and Guidelines shall take into cognizance that the intent is to continue use, or adaptively reuse, of the Historic Asset. Hence, the control shall be restricted to Quality of action, Adherence to procedures and Monitoring of impacts -- thereby following Avoided Impact Protocol. RHA preservation and change of use to a non-designated class may be an option in exceptional circumstances. The Policy and Guidelines are required to define the parameters and technicalities involved in changing/upgrading to non-designed use.

² The Shimla Railway station, a World Heritage Property, has recently been upgraded. However, without an access to pre-project documentations, proposals and record of state after implementation, it is difficult to deduce and generalise norms or standards from this project.

Section 3.2: Appraisal of Existing Laws and Norms

Existing norms and laws applicable to Heritage resources are broadly of two categories:

- Those applicable entirely and exclusively for Heritage Assets (Table 9: Comparative Summary of Laws Applicable to Heritage Protection).
- Those applicable to town planning and municipal corporations' Regulations and By-Laws - with a mandate for interface and balance between Heritage and urban development (Table 10: Comparative Summary Appraisal of Local Heritage Protection Norms of Selected Cities).

Provisions present and absent are marked as 'P' and 'A', respectively. The study validated that the documents discussed in Table 9 and 10 have a monument-centric 'control' bias, emphasizing more on minimizing development and sanitizing the area.

This appraisal excludes the cities of Jaipur and Ahmedabad because of their respective Bye-Laws – and the fact that they are World Heritage cities that are lived entities. Both have norms that focus on the continuity of existing functions and minimal changes. For all others. The RHA would require a system of protection and management that specifies the limits of change, and ways of transitioning to the future. Therefore, the nature of change required may not be immediately imagined here and now - but shall require a response, in the future, to the economic and contextual demands.

Also see **Appendix II: Comparative study of National Norms, Acts and Laws applicable to Heritage protection** and **Appendix III: Comparative study of Heritage Protection Norms of Selected Cities.**

Table 8: Comparative Summary of Laws Applicable to Heritage Protection

S. No.	Provisions	UBBL 2016 ³	AMASR Act	Model Heritage Regulations, TCPO, MoUD India 2011
Provisions present and absent are marked as 'P' and 'A', respectively				
1	Institutional Framework	P	A	A
2	Grading/Listing	P	A	P
3	Heritage Precincts	A	A	P
4	Building Parameters and Control Guidelines			
	Setback (in m)	A	A	A
	FSI			
	Ground coverage			
	Max. Permissible Height (in m)			
	Parking			
	Built-Up Area Ratio			
	Basement			
5	Open Space Regulations	A	A	A
6	Permissible Uses	A	A	A
7	General Guidelines for development/redevelopment/repairs etc. within the Heritage Area/ Precinct/ Asset/ Building:			
	Urban structure	A	A	A
	Urban grain			
	Scale			
	Parking			

³ While the UBBL 2016 is applicable for Delhi, it has been studied as part of National Norms, as it has been referred to by most other Norms/Byelaws. Even the Model Building Byelaws of Delhi refer to UBBL 2016.

S. No.	Provisions	UBBL 2016 ³	AMASR Act	Model Heritage Regulations, TCPO, MoUD India 2011
Provisions present and absent are marked as 'P' and 'A', respectively				
	<i>Materials and Detailing</i>			
	<i>Landscape</i>			
	<i>Views and Landmarks</i>			
	<i>Historical Development</i>			
	<i>Signage Design and Controls</i>	P		P
	<i>Skyline</i>	P		P
	<i>Others</i>	P		P
8	Architectural Control Guidelines	A	A	A
9	New construction/ Development/ Re-Development/ Addition/ Alterations or Extensions to Existing Structure	P	A	P
10	Prohibited Area	A	P	A
11	Regulated Area	A	P	A
12	Demolition of Heritage Building	P	A	A
13	Repairing	A	A	A
14	Selling or leasing out of the Heritage Property	P	A	A
15	Change of Use of Heritage Building	A	A	A
16	Maintenance of Heritage Building	A	A	A
17	Inventory and Mapping	A	A	A
18	Others			
	<i>Heritage Byelaw</i>		P	
	<i>Development Permission for Heritage Precincts/Natural Feature</i>			P
	<i>Restrictive Covenants</i>	P		P
	<i>Alteration/Modification/Relaxation in Development Norms</i>	P		P
19	Taking over Management and Control of Heritage Building	A	A	A
20	Penalties	P	P	P
21	Incentives	P	P	P
22	Owner's Responsibility	P	A	P
23	Mechanism for sanction	A	P	A

Table 9: Comparative Summary Appraisal of Local Heritage Protection Norms of Selected Cities

S. No	Provisions	Jaipur	Ahmedabad	Mumbai	Kolkata	Howrah	Chandigarh	Nagpur
Provisions present and absent are marked as 'P' and 'A', respectively								
1	Institutional Framework	P	P	P	P	P	P	A
2	Grading/Listing	P	A	P	P	P	P	P
3	Building Parameters and Control Guidelines							
	Setback (in m)	P	P					
	FSI	A	A					
	Ground coverage	P	P					
	Max. Permissible Height (in m)	P	P	A	A	A		A
	Parking	P	P				A	
	Built-Up area Ratio	P	A					
	Basement	P	P					
4	Open Space Regulations	A	P	A	A	A		A
5	Permissible Uses	A	P	A	A	A		A
6	General Guidelines for development/ redevelopment/repairs etc. within the Heritage Area/ Precinct/ Asset/ Building							
	Urban structure							
	Urban grain							
	Scale				A			
	Parking	P		A	P	A		
	Materials and Detailing		A					
	Landscape							
	Views and Landmarks				A			
	Historical Development							
	Signage Design and Controls	A		P	P			P
	Skyline	A		P	A			P
7	Architectural Control Guidelines	P	A	A	A	A		A
8	New construction/ Development/ Redevelopment/ Addition/ Alterations or Extensions to existing Structure	P	P	P	P	A		P
9	Prohibited area	P	A	A	A	A		A
10	Regulated area	A	A	A	A	A		A
11	Demolition of Heritage Building	A	A	A	P	A		A
12	Repairing	P	A	A	P	A		A
13	Selling or leasing out of the Heritage Property	A	A	A	P	P		A
14	Change of use of Heritage Building	A	A	A	P	A		A
15	Maintenance of Heritage Building	P	A	A	P	P		A
16	Inventory and Mapping	P	A	A	P	A		A
17	Others							
	Heritage Databank	P						
	Heritage Conservation Plan		P					
	Requirements of Sites			P				
	Development Plan Reservation			P				
	Relaxation in Building and other requirements			P				

S. No.	Provisions	Jaipur	Ahmedabad	Mumbai	Kolkata	Howrah	Chandigarh	Nagpur
Provisions present and absent are marked as 'P' and 'A', respectively								
	<i>Restrictive Covenants</i>							P
	<i>Power to alter, modify or relax other Development Control Regulations:</i>							P
18	Taking over Management and Control of Heritage Building	A	A	A	P	P		A
19	Penalties	P	P	A	P	P		P
20	Incentives	P	P	P	P	P		P
21	Owner's Responsibility	P	A	A	P	P		P
22	Mechanism for sanction	P	P	P	A	A		P

Section 3.3: Summary of Case Studies

(Table 11: Summary of Case Studies) summarizes case studies focusing on how Heritage Assets are being managed, upgraded and adaptively reused. Special focus is given to study of railway systems -- and how these have either been upgraded, or those ceasing service have been repurposed, to suit contemporary life. To understand how these projects have been achieved, their enabling Norms, Laws, Standards and Procedures followed were studied. The list of documents studied are included in *Index (III)*.

Table 10: Summary of Case Studies

S. No.	What has been done	Why adapt	What could be adapted
1.	Air Rights Development (ARD) or Overbuild (Goldschmidt, 1964) - Historically, ARD has mostly occurred over the Railways and highways in North America due to the central location of the transportation routes, where high Land Values justify the added economic costs of ARD (Lillie, 1964) - No land is required for new developments, but 'under-utilized' densities can be utilized for new developments, especially in high-density areas where land is more of a premium or where developable land is unavailable.		
a.	Railroad (New York Central; Cleveland Union Terminal Co.; Chicago and North Western; Ill. Central, Chicago; N.Y. Central; Southern Pacific; Long Island; Chicago and North Western; Pennsylvania Station; Illinois Central)		
	- Air rights for built spaces over Rails, Railway related structures, or car parks. - New York Central's tracks, which were once surrounded by semi-slums, were covered by a platform and the Right of Way was transformed into one of the most admired pieces of real estate in the world. - Illinois permits railroads, which have right over revenue collected from real	- Preserving Green Space. - Integrating Land Use and transportation. - Mixing Land Uses. - Fully utilizing existing urban land and infrastructure. - Ensuring compact building design. - Providing transportation options; and - Directing development within existing areas.	- The leasing, with options to renew, of air space and land necessary for foundations by the owner to the developer. - The conveyance of the entire fee of land and air space to the developer, with an easement reserved to continue the surface use. - The conveyance of the fee to the air space and support areas. - Check prior to overbuilding: Structural stability of existing Assets; Potential disturbances

S. No.	What has been done	Why adapt	What could be adapted
	estate, to sell or lease the air rights for further development. This is provided such developments do not interfere with Railway operations.	Provides financial incentives to owners of Assets.	(acoustic, vibration, circulation etc.) to the new development; and Safety, security and access. - Impact to Historic structural and visual-aesthetic integrity to be assessed. - New developments can be in the form of structures or car parks -- i.e., public utility Green spaces as overbuild.
b.	Earl's Court Regeneration Plan, London		
	- Regenerating the 32-hectare Earl's Court site involved creating four new distinct urban villages, - Including community amenities, retail, workspace, offices, hotels, health, and leisure.	- Facilitate the potential to create a highly walkable and cyclable environment, - Generation of a forecasted 10,000 new jobs.	Off-site pedestrian improvements as part of a comprehensive public realm strategy for the surrounding area.
c.	Principal Place, Shoreditch, London		
	Mixed-use development that includes a 60,000 sq. m. contemporary office building, and a 50-storey residential tower connected to a public piazza -- built on a steel grillage over the 28.5m-wide, 7m-deep open Railway cutting.	- Placing foundations or supports in the very limited space between the Rail tracks. - A column of the 15-storey commercial building supported on steelwork, cantilevered over the Rail tracks.	Structural design solutions.
d.	Royal Mint Gardens, Tower Hill, London		
	High-quality residential units and communal amenity spaces, articulated by new public spaces, communal roof terraces and courtyards.	- Development maximizes the site's high and low-level Docklands Light Rail (DLR) lines and cantilevers over viaducts of another Rail line. - Spaces within the viaducts utilized.	- Use of Transfer structures, - Meeting the requisite vibration and noise isolation standards covering Rail box containment and acoustically isolated foundations.
e.	Riverside South, New York		
	- Largest-ever all-residential development, covering 30 hectares of defunct Rail yards, - Comprising 5,700 apartments spread over 16 buildings of 15-49 storey, 3,500 parking places under the buildings, retail space, parkland and rejuvenated highway and public transportation facilities.	- Dense residential development required decking over active Railroad tracks, - Pre-stressed, precast concrete planks used to span the Rail tracks, supported at either end by 600-mm thick reinforced-concrete crash walls, - Loads from the apartment blocks are borne by 1,200 to	- Structural design solutions, - Pre-stressed, precast concrete planks, - Rejuvenated highway and public transportation facilities, - Decking of residential units over active Railroad tracks.

S. No.	What has been done	Why adapt	What could be adapted
		1,800-mm deep transfer beams.	
2.	Biodiversity Offsets (IUCN 2016) (NSW Department of Planning, Industry and Environment n.d.) (NSW Department of Planning, Industry and Environment 2017)		
a.	New South Wales		
	Biodiversity Offsets are designed to give biodiversity the gain to compensate for residual losses i.e., it is a policy approach that seeks to minimize the environmental impacts of a development project, by ensuring that any damage in one place is compensated somewhere else.	● Utilize undeveloped land owned by the Indian Railways. ● Undertake 'ecological development' of another area under the control of the Railways to compensate for environmental, cultural damages during development in one area. .	● Redeemable 'points' for innovative and sensitive solutions – for Developers involved in Station Area Redevelopment projects. Sensitive solutions could be Salvage of material discarded by the Railways - such as sleepers, rails etc., Minimal demolitions, and Responsible disposal of construction waste, etc. ● Life cycle - sustainable management. ● 'No Net Loss' (NNL) and 'Net gain' (NG) approaches for Biodiversity use of targeted and measurable environmental goals.
3.	Route Adaptation (Kapp 2019) (The Puffing Billy Railway n.d.) (Henley 2017) (Taiwan The Heart of Asia n.d.) (Cowling 2019) ● Paths are flat or gently sloping, making them easily accessible and helps enjoy the outdoors. ● Ideal for many types of activities -- depending on the rules established by the local community -- including walking, bicycling, wheelchair use, etc.		
a.	Rails-to-Trails Conservancy		
	● Multipurpose public paths created from former Railroad corridors. ● Providing resources in the form of Trail planning, capacity-building grants, technical support, and best practices for rural, suburban and urban communities seeking to build trails and connect the trail systems.	● Linking corridors across the country, ● Mobilizing trail supporters and public to advocate safe walking and biking infrastructure, ● Partnering with nationally respected organizations, Federal, state and local agencies, Public leaders and Trail advocates to build trails and educate.	● Creating trail networks that connect people and places, bringing transformative benefits to all communities, ● Preservation of defunct Railroad corridors for continued public use.
b.	Puffing Billy Railway, Australia		
	● From the very outset, Victoria's Narrow Gauge Railways proved to be very uneconomical in operation and were plagued with continuing financial losses. ● In 1953, a landslide blocked the track, and because of operating losses the line	● Everything that is part of the scene -- i.e., from locomotives and rolling stock to buildings, fencing, signs, furniture, etc., and even staff clothing -- is representative of the Railway, as it operated in the 'Era of Significance' where the aim is to take the visitor "back in time."	● Presentation of the Railway – 'Operating' or 'Living' museum. ● Employment generation.

S. No.	What has been done	Why adapt	What could be adapted
	was officially closed in 1954. ● Puffing Billy Preservation Society, founded in 1955, provided a financial guarantee against loss to the Victorian Railways, which continued to operate the little train between Upper Ferntree Gully and Belgrave.		
c.	Jiji Town Railway Tour Line, Taiwan		
	● Built by the Japanese government in 1922 to transport timber and people to build the first hydroelectric plant in Taiwan, and then it was reinvented as a tourist Railway. ● The Station was destroyed in the 1921 Earthquake -- but later reconstructed and restored to its original look. ● Under the collaborative effort of the Railways Administration and Township Office in 1994, the small trains of the Jiji route were transformed into painted tourist trains.	● Each train on the Jiji line is decorated with its own unique character set. ● The Rail station is a functional monument -- as it has been part of the contribution of the route to the regional economy.	● Reuse as Heritage tourism route, ● Preservation of Railway stations along the route, ● Employment generation. ● Collaborative effort of Railway administration with state/town authorities.
4.	Adaptive Reuse - Change of Uses (Erdoğan and Erdogan 2013) (Design Build n.d.) (Project for Public Spaces 2002) (Contell-Martínez Arquitectos 2017) (The Engine Shed n.d.)		
a.	Tokyo Station, Marunochi, Japan		
	● Renovation of the century old Railway station has revived some of the original glory of the sprawling, domed structure -- regarded as a central Tokyo architectural and historic masterpiece. ● Restored north and south-end rotundas, and revived the building's 3rd floor. ● Domed rotundas now retain their original look. ● The Tokyo Station Hotel was also renovated and reopened. ● Renovation cost was about ¥50 billion, but JR East	● Station traffic increased about 40% in the opening week. ● Sales at restaurants logged 20% growth - more popular were those with views of the station. ● Renovation has turned the terminal area used merely as a transit point to a major tourism spot, attracting people from all over Tokyo, Japan and abroad. ● Now, people come to the Railway station for sightseeing, shopping and leisure.	● Part change in use, suited to the commercial appeal of the site. ● Uniformity in structure facade of the Station Area. ● Not only renovated the historic red-brick building, but also the Yaesu side on the opposite side of the terminal.

S. No.	What has been done	Why adapt	What could be adapted
	recovered part cost by selling off air space to surrounding high-rise buildings to build higher floors.		
b.	Musée D'Orsay, Paris		
	• New spaces added to the main space by partitions, • Roof was partially made transparent, and lateral naves turned into exhibition halls with double-sized height. • Rooms of the hotel were added to the museum. • Hotel's restaurant kept serving even after the Railway station being converted to a museum.	• Rail Terminal building fell short in meeting the commuter demand post-1939. • After multiple changes in use, it was decided to re-designate the building as a museum -- which would contribute to the cultural development of Paris.	• Low-interfering nature of museum function, • Integrated support system to facilitate museum function, • Supports academia, • Need to have a long-term operating plan.
c.	Budapest Nyugati Railway Terminal		
	Budapest Nyugati Railway Terminal-to-McDonald's Fast Food, Budapest.	Terminal buildings were facing imminent demolition.	• Not an ideal example (McDonald's is junk food -- the association with zero-food also devalues the Rail station). • Knee-jerk reaction to Heritage
d.	St. Louis Union Station		
	St. Louis Union Station-to-Hotel + Shopping Mall + Restaurants, St. Louis, Missouri.	Adaptation to a hotel was easier, since a part of the building was originally designed as a hotel.	No transfer in identity.
e.	Edirne Railway Terminal		
	• Edirne Railway Terminal to Presidency of Trakya University, Turkey. • Due to changes in the function of the building, it has undergone numerous repairs.	Present function is suitable for monumental characteristics of the building.	More or less a correct preference, as it is a public space.
f.	The Engine Shed, Stirling (Scotland)		
	• The Engine Shed building, used as a goods transfer shed, was built sometime between 1896 and 1913 -- and was also a part of an important military complex. • Historic Shed upgraded while disturbing as little as possible of the original	• Serves as a central hub for Building and Conservation professionals, and the general public. • Showcases contemporary use of traditional material with sympathetic design and construction.	Scotland's dedicated Building Conservation Centre - inspiring future generations to continue to care for Scotland's built Heritage.

S. No.	What has been done	Why adapt	What could be adapted
	fabric and character; Two new sheds built -- one on either side of the original structure providing extra space for the Conservation Centre. As part of the restoration, the floor has been taken down to the original level, and the rails and platforms removed.		
5.	Effective Conservation Principles (Bentham Crouwel Architects n.d.) (SSF Ingenieure n.d.) (UIC 2013) (ZUO n.d.) (Kings Cross Team and Conservation and Urban Design Team 2004) (John McAslan + Partners 2012) (New York Transit Museum 2014 - 2017)		
a.	Amsterdam Central, Netherlands		
	- Adding Metro stop and metro tunnel underneath the central tunnel of the Terminal train station; Removing bus stations from front to the back of the Railway station; Adding an underground tunnel for vehicle traffic, - Adding paths for cyclists and pedestrians. - Elevation of the Railway platforms to a height of 76cm ('Program P76+'). - Construction of a new roof, tunnel and entrance hall on the river, - Reclamation of 40m of land from the river.	- Turning a typical 19th century Railway Architecture Terminal station to a 'through' station. - Expansion and renovation of the 1889 Station Building increased passenger capacity 10 times.	- Integrating National policy to benefit Station design. - Restructuring the public transport system. - Barrier-free passageways. - Widening of historical Open Havenfront (harbour front) to emphasize the island character. - Renovation of the historic Station Building restored its former glory, while new additions were clearly recognizable as contemporary.
b.	Dresden Central, Germany		
	Modern solutions chosen harmonize with the character of platform halls, where original design elements were missing.	Resulted in an overall concept which not only respects and emphasizes the old structure and the history of the Station - but also integrates modern and innovative concepts that represents the development of Railway.	- Conservation principles and design strategies. - Detailed documentation of the historic Railway.
c.	Saint-Lazare Station, Paris		
	Widening passage from Railway station to Rue d'Amsterdam, and creation of a side entrance -- improving access and making the Station safer.	Rethinking inter-modality of the premise, and simplifying movement through the stations.	- Preservation and enhancing architectural Heritage by restoration of the building. - Improved pedestrian flow in the Railway station. - Routing Metro line as an additional interchange level component.

S. No.	What has been done	Why adapt	What could be adapted
	• Creation of 250 underground parking spaces, and retail spaces -- providing travellers and visitors with improved service and convenience.		
d.	King's Cross Central, London		
	• Orientation, solar shading, and use of thermal mass for cooling and passive ventilation systems. • Water-saving and recycling technologies. • Roofs planted with allotments, gardens and lawns. • Office buildings designed to achieve environmental performance 40% greater than required regulations. • Combined heat and power (CHP) engines makes conventional boilers redundant. • Waste from public areas and buildings channeled through direct recycling. Incineration for energy from food waste and mixed waste.	Streamlined planning and Heritage procedures.	• Planning policies integrated with Building Conservation. • Energy efficiency techniques.
e.	Grand Central, New York		
	• Multiple repairs and renovations over the century. • Now operates as a museum, exhibition centre, and market space. • Use of ramps, rather than staircases, to conduct passengers and luggage through the facility.	• The 1996 restoration generated over 2,000 construction-related jobs throughout New York State. • World's 10th most visited tourist attraction, excluding train and subway passengers. • Terminal's main concourse is often featured in movies and television shows.	• More than just a Terminal -- a venue. • City's crown jewel. • Grand Central Terminal meets Americans with Disabilities Act (ADA) requirements.
6.	Using digital heritage technology (ARCADIS n.d.)		
a.	Manchester Victoria Station, United Kingdom		
	• Complete remodeling of the Metrolink infrastructure at Manchester Victoria station, to increase tram capacity. • Pioneering use of BIM to collaborate and manage	Using BIM helps in reduction of construction time.	BIM integration and data management.

S. No.	What has been done	Why adapt	What could be adapted
	the supply-chain saving time and money during construction.		
8.	Railway Heritage related Planning Policies (Parks Canada 2020) (RPS 2004) (Butcher 2010)		
a.	Heritage Railway Stations Protection Act, Canada		
	• Designation and protection of Heritage Railway stations and specific Heritage features under the Canada Transportation Act. • No Railway company may, in any way, alter, demolish, or transfer ownership of a designated Heritage Railway station without the authorization of the Government of Canada. • Violations of the Act are punishable by fines of \$ (Canadian) 50,000 to 1 million.	Limitations of the Act: • Protection limited to Stations owned by federally licensed Railway companies. • Does not extend to other historic Railway structures, such as 'Roundhouses'. • Not mandatory for a Railway to maintain a property to Heritage Canada guidelines, or repair any damage. By inaction, a Railway can leave a Historic structure in ruins.	• The effectiveness of the Heritage Railway Stations Protection Act ultimately depends on the Railway companies who manage and care for the stations daily, and on the private citizens who continue to express concern for the protection of these resources.
b.	King's Cross Central, London		
	• Planning policies aim at striking a balance between maximizing development opportunities -- given the 'brownfield' characteristics, central London location, and high level of public transport accessibility -- and of conserving and enhancing its Heritage and other environmental resources. • Channel Tunnel Rail Link (CTRL) Act in 1996.	• Comprehensive, phased, Mixed-Use development of former Railway Lands within the King's Cross Opportunity Area. • Mixed-Use development of part of the former Railway Lands within the Camden King's Cross Opportunity Area and Islington Area of Opportunity.	• Streamlined planning and Heritage procedures. • Development framework drawing upon the historic features of the site -- to create a truly sustainable business and residential community, reliant on minimum use of cars.

Appendix I: Excerpts from Field Work at Howrah, Shimla and Egmore Railway Stations

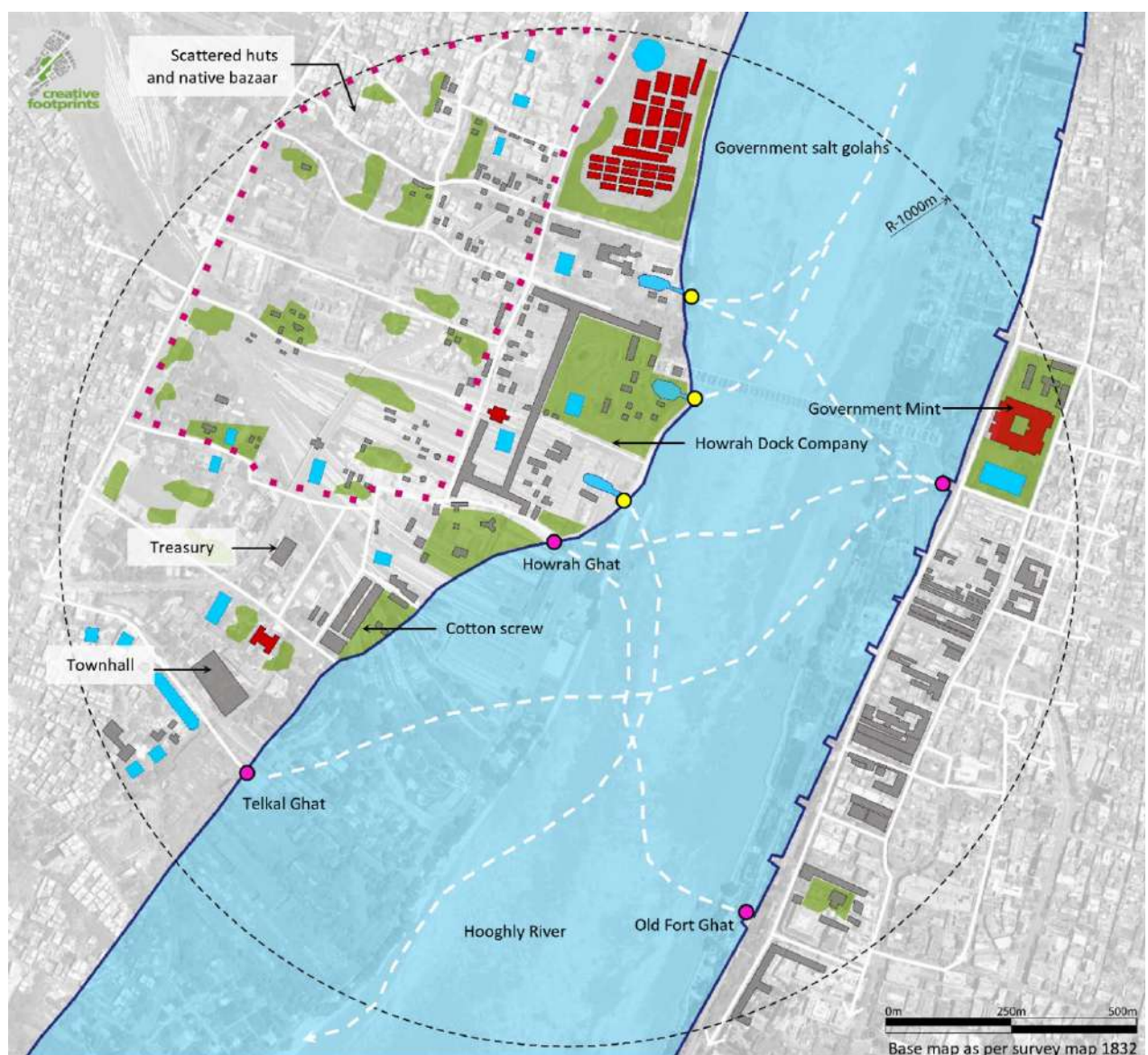
Section 01 Howrah Railway Station

1.1 BEFORE THE ADVENT OF THE RAILWAYS

1.1.1 Pre-Railway Era (till 1832)

In AD 1713, the Bengal Council of East India Company (EIC) sent a deputation to Delhi, appealing to the Mughal Emperor Farrukshiyar to grant acquisition of some villages, and for trade. The requisition was for Salkia (Salica), Howrah (Harirah), Kasundia (Cassundeah), Ramkrishnapur (Ramkrishnopoore), and Betor (Battar) to the west of river Bhagirathi. Once granted, the EIC immediately created exit and entry points which were seafaring business hubs, and this was the initiation of modernization of Howrah as we know today.

Map 1: Howrah Before 1832 - Pre-Railways



Source: (Tassin 1832)

- Ghats
- Docks
- Heritage structure
- Orchards, gardens & topes
- Water bodies

1.2 INCEPTION AND EXPANSION OF HOWARAH RAILWAYS

1.2.1 Railway Land, Line and Station (1847)

1845: Survey began in 1845.

1850: An initial survey from Howrah (across the river Hooghly from Calcutta) to Burdwan on the route to Raniganj Coalfields was carried out.

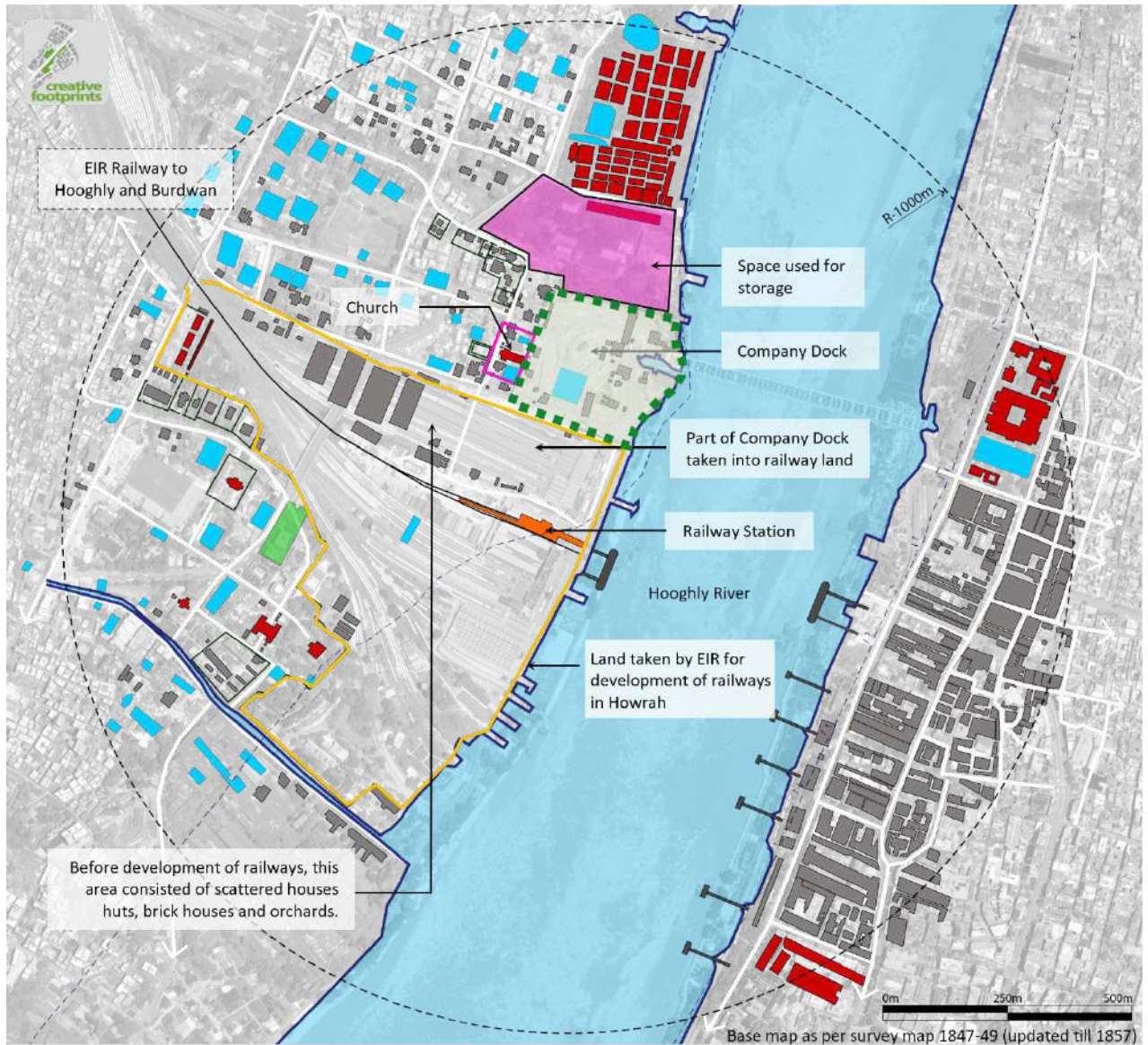
1852: East India Railway (EIR) occupied the land despite opposition of the British Government. The latter did not sanction the purchase of sufficient land nor the necessary waterfrontage, as they expect the Terminus to grow – and, thereby, its potentials.

The land purchased by the East India Railway (EIR) had an orphanage and a church of the Portuguese Missionaries. These were shifted to Calcutta and the Company built a makeshift arrangement with tin sheds to facilitate maintenance work, and Train Building Yard to initiate Railway operation. The leftover area to the north west was used for storage of materials, and subsequently became the storage depot of EIR.

1854: The first section (Howrah-Hooghly main line) and Hooghly – Pandooah Main Line opened in August. The first Railway Station Building was a structure of iron sheet roof and one platform. By 1850, several important routes converged. These routes connected producer areas with resources of interest to the EIC.

(Map 1: Howrah Before 1832 - Pre-Railways) shows the context in which the Howrah Station was established and the change in land use when the Station operation started *(Map 2: Howrah 1845–1852 - Railway Land, Line and Station)*.

Map 2: Howrah 1845–1852 - Railway Land, Line and Station



Source: (Simms 1858)

- | | |
|--|---|
| Howrah Station area | River Edge before 1850s |
| Heritage structure | Existing river edge |
| Water bodies | Store Depot |
| Burial ground | |
| Railway premises (as per 1847-1849 survey map) | |

1.2.2 Station and Station Line Expansion (1854-1890)

Expansion of Station Lines:

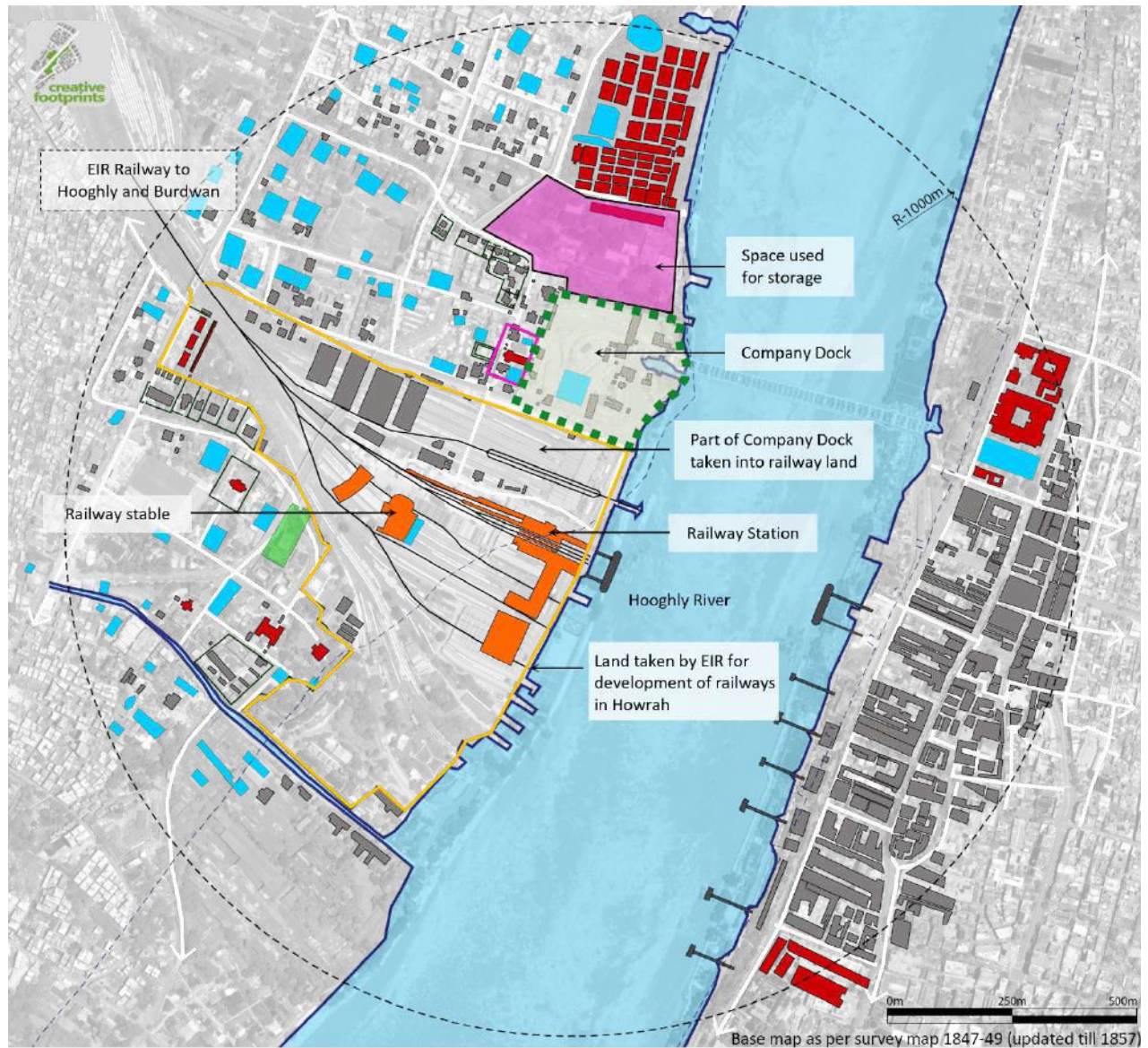
1855: Sheoraphuli – Tarakeswar Branch Line

1863: Azimganj – Nalhati Branch Line

1866: SBG Loop (Khana Jn. – Kiul Jn.)

1885: Bandel – Bardhaman Main Line

Map 3: Howrah 1845-1890 - Station Line Expansion

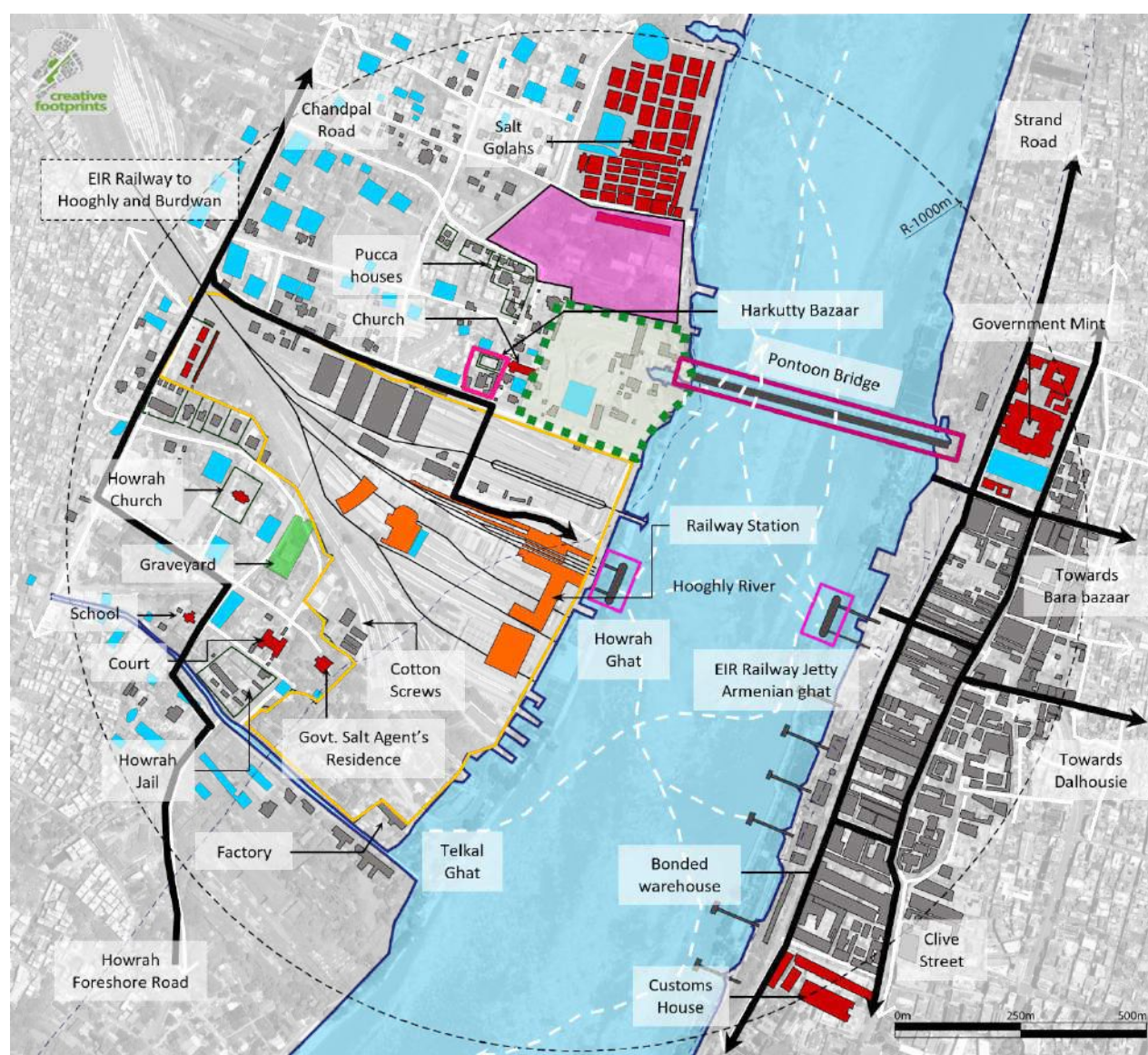


Source: (Simms 1858)

- | | |
|--|---|
| ■ Howrah Station area | --- River Edge before 1850s |
| ■ Heritage structure | --- Existing river edge |
| ■ Water bodies | ■ Store Depot |
| ■ Burial ground | --- Company Dock |
| ■ Railway premises (as per 1847-1849 survey map) | |

1.2.3 Linkages, Interchange Nodes and Surroundings

Map 4: Howrah 1845-1890 – Linkages, Interchange Node



Source: (Simms 1858)

- | | |
|--|--|
| Howrah Station area | River Edge before 1850s |
| Heritage structure | Existing river edge |
| Water bodies | Store Depot |
| Burial ground | Company Dock |
| Railway premises (as per 1847-1849 survey map) | |

Prior to 1862 there was no bridge across the Bhagirathi, and passengers and goods were ferried over boats to and from the Railway station. Railway passengers were ferried to and from Armenian Ghat on the eastern bank by steamers. The ghat also had the only booking counter, which provided an integrated ticket that included the fare of crossing the river to arrive at the provisional Rail platform and the Railway journey.

There was a Railway pontoon instead of a landing ghat towards the Railway station. (Map 4: Howrah 1845-1890 – Linkages, Interchange Node) shows the stages of development of interchange points, nodes and linkages once the Station commenced operation. The increase in improved infrastructure, density of nodes and diversification of modes and business prospects indicate the impact Howrah Station had on the area after its operation.

1862: A feasibility study commissioned by the Governor of Bengal, was conducted to bridge either banks of the Hooghly River, but wasn't pursued further.

In **1865**, another platform was added for arrival departure of trains separately.

1870: The Calcutta Port Trust was founded and entrusted, via the Howrah Bridge Act of 1871, with the construction and maintenance of the Bridge.

1874: A pontoon bridge was built by the Calcutta Port Trust to link Calcutta and Howrah, without disrupting the river traffic. Chandpal Ghat and Strand Road, along with the waterways and the pontoon bridge became the main interlinked access to Howrah station.

The Railway lines connected Howrah and Hooghly to Bali, Serampore and Chandernagar.

Opening of Howrah Railway Terminus, provided significant riverside economies for the growth of industries like jute mills, ship repair and engineering, wagon manufacturing units and dockyards. Chandpal and Strand road, waterways and bridge became main interlinked access to station.

1.2.4 Station and Station Line Expansion 1890-1945

1897-98: Howrah-Amta line was opened from Telkalghat to Kadamtala station. This line proved profitable and expanded the penetration of goods and passenger traffic. Laying of the circular Railway, connecting BBD Ghat and Majerhat, further enhanced the mobility and transfer of goods from port area to warehouses. Gradually, due to the silting of Hooghly and its inaccessibility to bigger ships, this line ceased functioning.

1901: Wagon manufacturing workshop set up by Burn and Co.

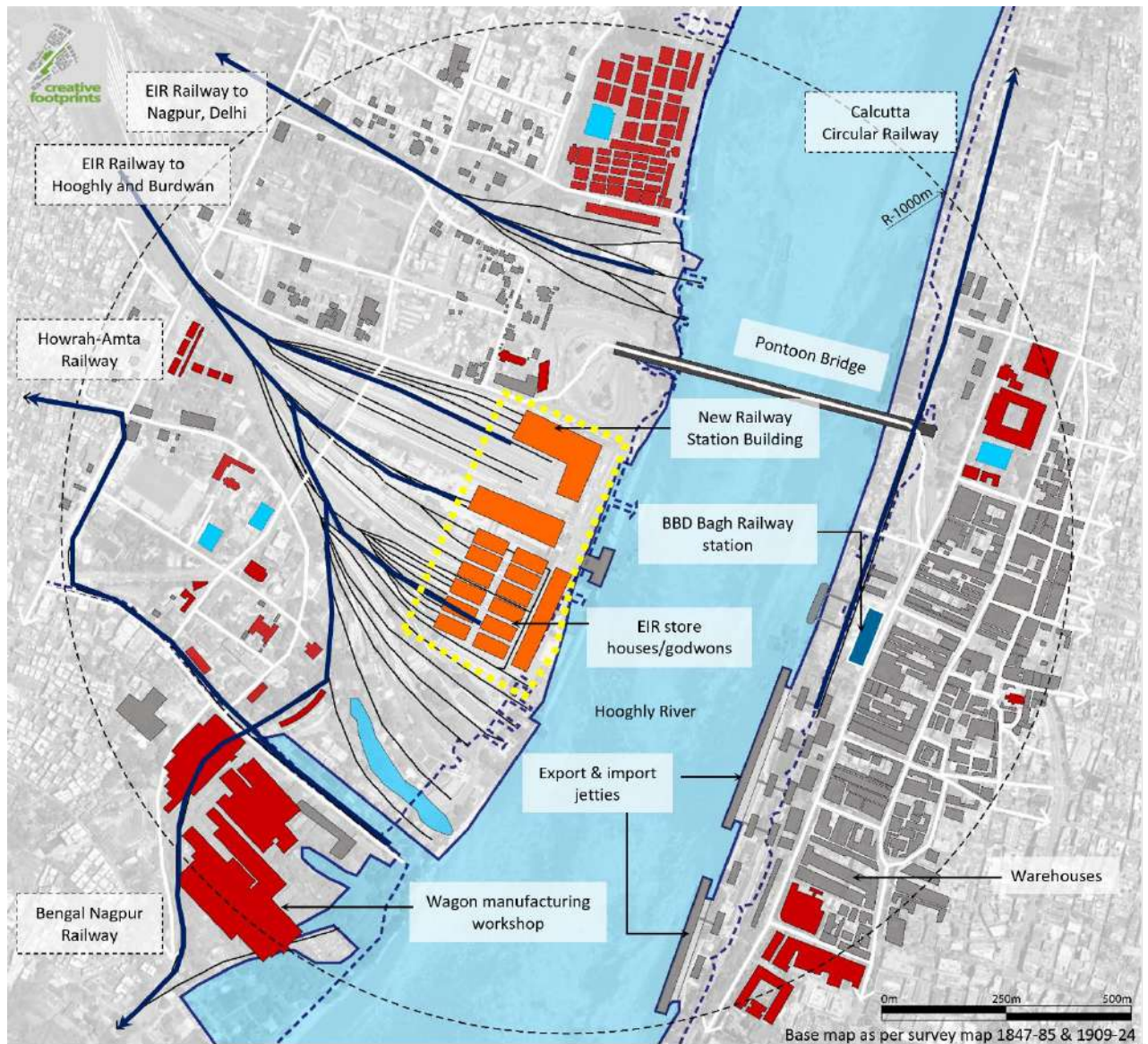
1901: Due to a great increase of traffic, a new station building was proposed. A new, larger Howrah Terminus station with six platforms and provision for four more constructed. Outside a long row of godowns has been erected for the enormous good traffic, especially in coal, wheat, rice and oil seeds which come to Howrah.

1905-1909: Howrah station was remodeled on the formation of a joint station with the Bengal-Nagpur Railway. A small branch line established connection with the Kidderpore docks via Shalimar.

From a single platform station, the Howrah Terminus now had six platforms, with provision for four more lines. Outside, a long row of godowns were constructed, evidencing the volume of goods traffic, especially in coal, wheat, rice and oil seeds which converged to Howrah.

(*Map 5: Howrah Station Expansion from 1890-1945* and *Map 6: Howrah Station - New Howrah Bridge and Tram Network*) shows the further increase of transport modes and other developments as a result of expansion in Railway operations.

Map 5: Howrah Station Expansion from 1890-1945



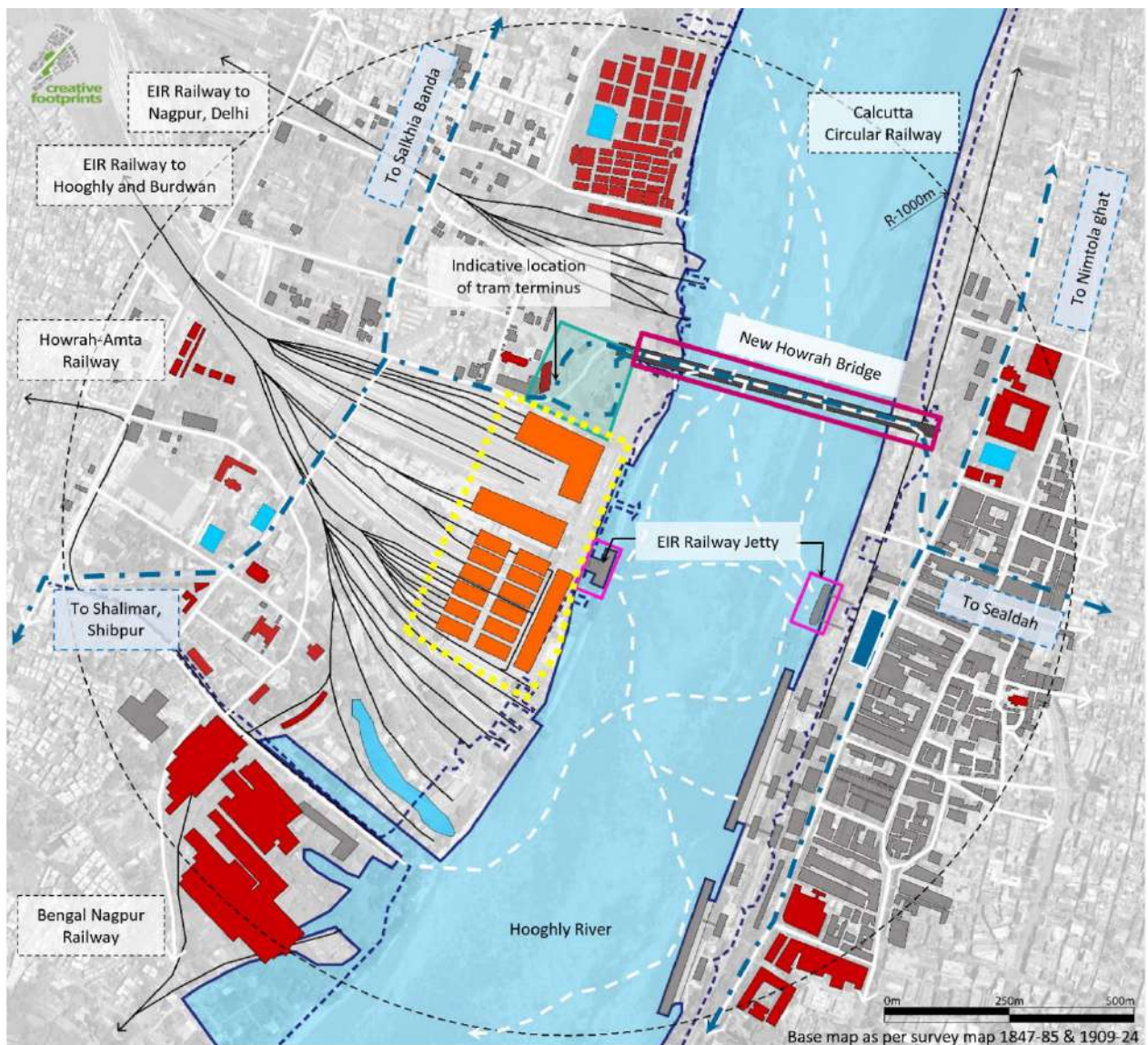
Source: (Sociological Map: City of Calcutta 1910),(Bartholomew 1909)

- | | |
|--|--|
| Howrah Station area | River Edge before 1890s |
| Heritage structure | Existing river edge |
| Water bodies | Railway station |

1.2.5 New Howrah Bridge and Tram Network

1943: With operation of the Howrah bridge, Calcutta tramways extended its operations connecting Howrah with Calcutta with road transport. A tram terminus at Howrah station was constructed.

Map 6: Howrah Station - New Howrah Bridge and Tram Network



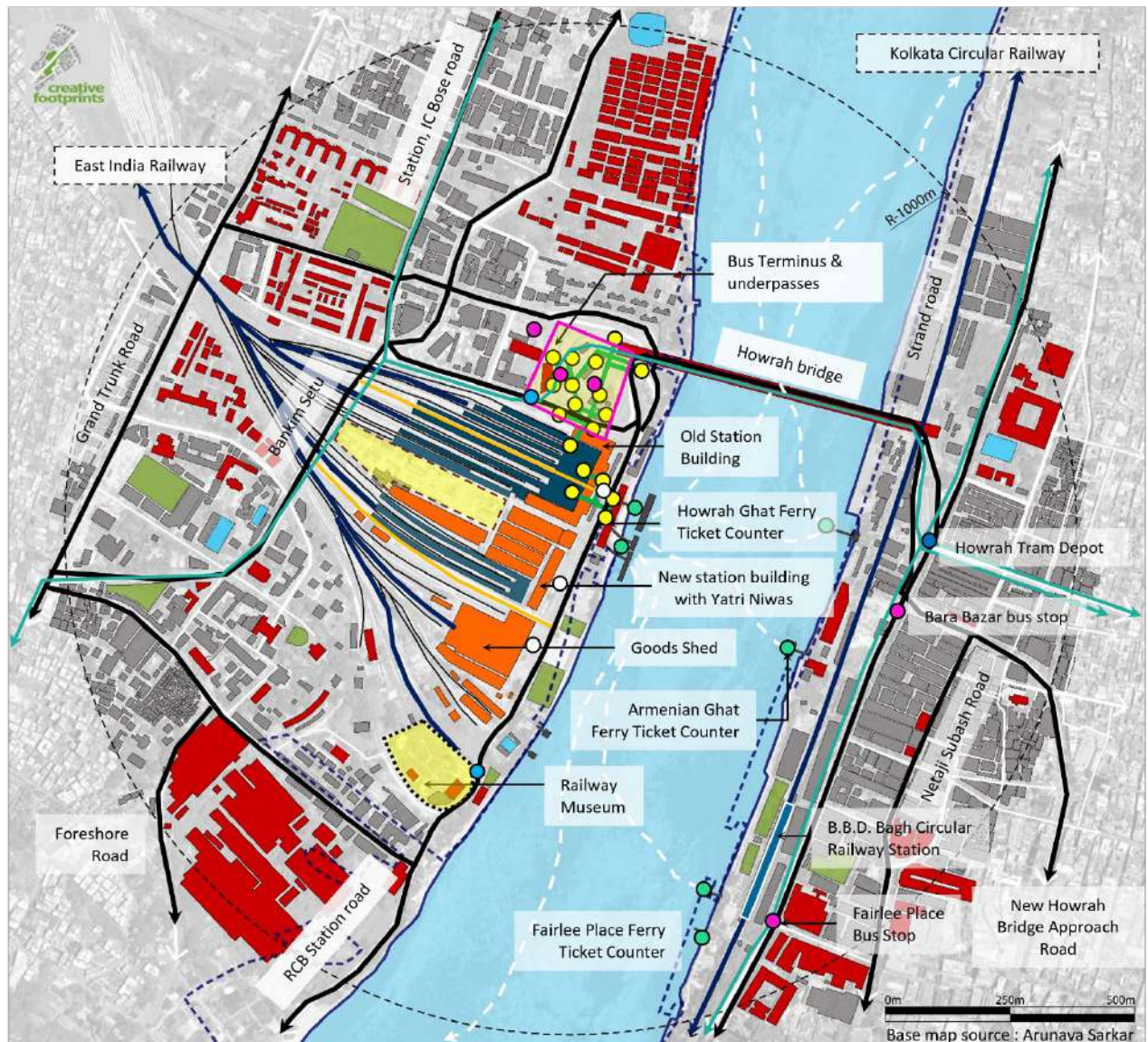
Source: (Sociological Map: City of Calcutta 1910)_(Bartholomew 1909)

- River Edge before 1890s
- Existing river edge
- Howrah Station area
- Heritage structure
- Water bodies
- Railway station
- Tram line

1.3 CHANGES and DEVELOPMENTS SINCE THE '70s

1.3.1 Linkages and Interchange Nodes

Map 7: Howrah - Present-day River Frontage



- | | |
|------------------------|--------------------------------|
| — Earlier river edge | — Station Cab roads |
| — Existing river edge | — Main access roads to station |
| — Railway track | ● Subway entry/exit |
| — Tram line | — Subway pedestrian movement |
| ● Bus interchange | ■ Howrah Station area |
| ○ Taxi/cab interchange | ■ Platforms |
| ● Ferry interchange | ■ Heritage structure |
| ● Tram interchange | ■ Water bodies |
| ● IPT interchange | ■ Open/ green space |

1970-71: Tram terminus at Howrah station was closed when the Howrah bridge was declared unfit to carry trams. Many vehicles and pedestrians began to traverse the tram tracks when the routes discontinued. The terminus station was converted to underpasses and a bus terminus.

1980-84: Circular Railway rehabilitated.

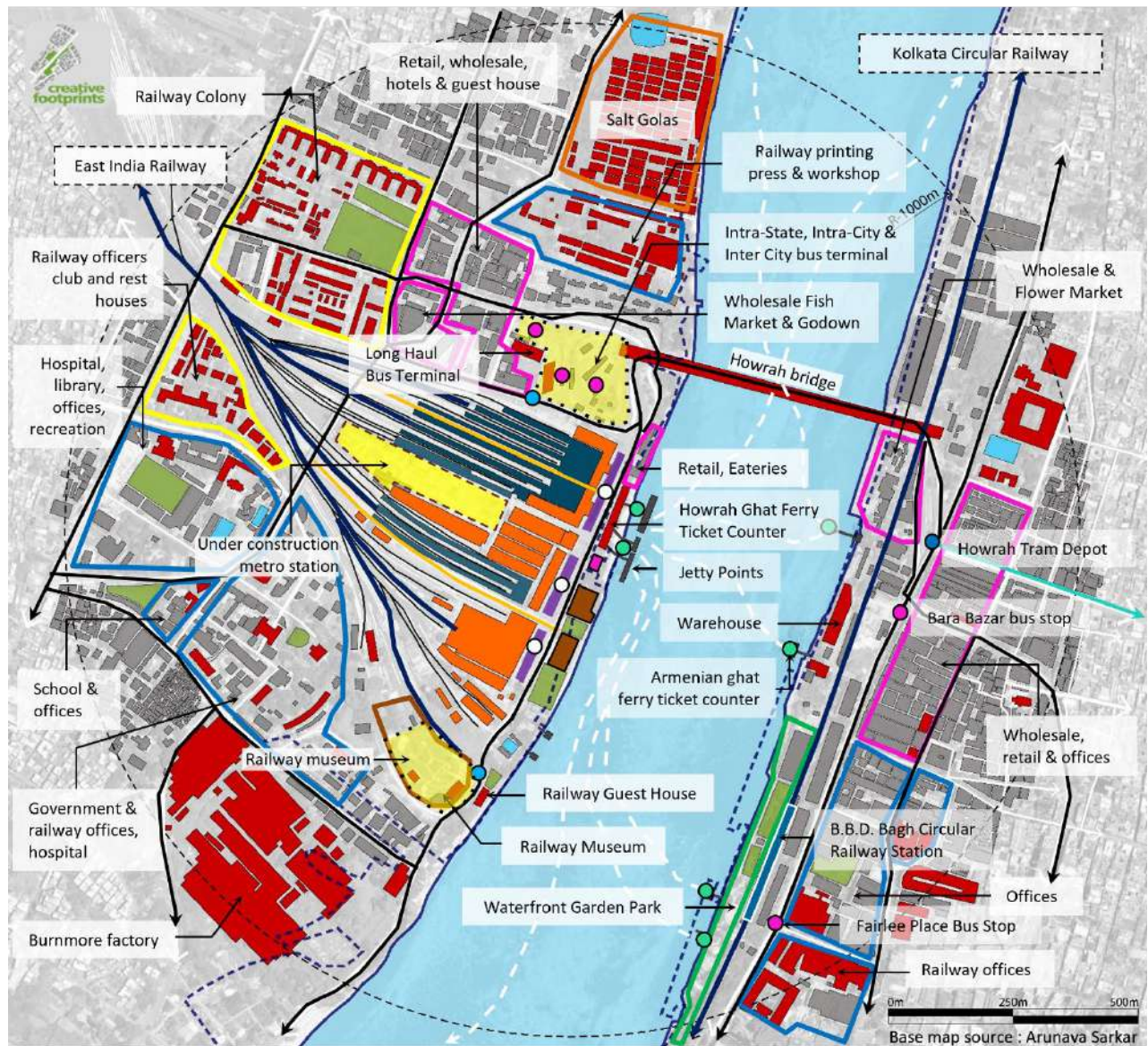
1980: Howrah station was expanded for the second time, by adding 8 platform tracks to the south of the station which previously had a parcels terminal. The track count then went upto 23. A new Yatri Niwas (transit passenger facility) was built to the south of the original Head House.

2006: Railway museum was established.

(Map 7: Howrah - Present-day River Frontage) and (Map 8: Howrah - Present-day Surroundings) shows how the area around the Railway Station became the centre point of regional trade and connectivity since the 1950's.

1.3.2 Station Surroundings

Map 8: Howrah - Present-day Surroundings



- | | |
|------------------------------|-------------------------------|
| Existing river edge | Howrah Station area |
| Earlier river edge | Platforms |
| Railway track | Heritage structure |
| Tram line | Water bodies |
| Station Cab roads | Open/ green space |
| Main access roads to station | Taxi zone in front of station |
| Bus interchange | Uber booking zone |
| Taxi/cab interchange | Parking (2 & 4-wheeler) |
| Ferry interchange | |
| Tram interchange | |
| IPT interchange | |

Section 02 Shimla Railway Station

2.1 BEFORE THE ADVENT OF THE RAILWAYS

2.1.1 Pre-Railway Era (till 1832)

1817: This forested area was surveyed for the first time. The settlement was close to the Jakhoo temple with a few scattered hutments.

1822-24: Captain Charles Pratt Kennedy, political officer to the Hill States, built Simla's (renamed Shimla) first pukka house, named the 'The Keneddy House'.

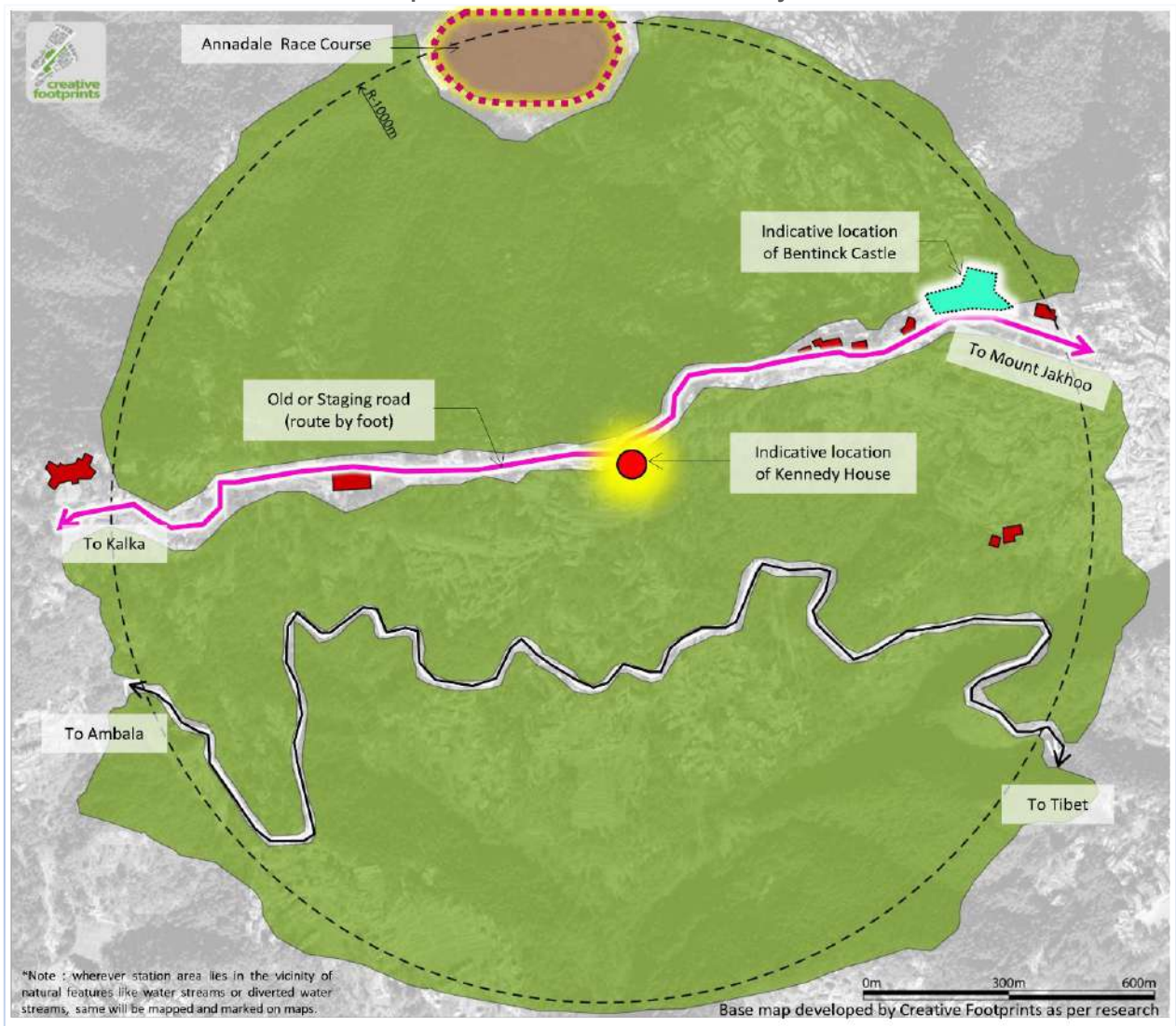
1828-29: Bentinck Castle was built by Lord Bentinck for his staff.

1830: Shimla developed as a major base for the British.

1834-40: Annadale ground was laid out. It was used for a Fancy Fair in 1839. In 1840, Annadale was converted into a Race Course.

Old or Staging road: Before the coming of the Railways, a route by foot connected Shimla with Kalka via Kasauli, Sanawar, Kakarhatti, Sairi and Jutogh. This road, shown in (Map 9: Shimla 1817-1840 - Pre-Railways), connected Mount Jakhoo and became Shimla's Mall, following almost the same alignment as today.

Map 9: Shimla 1817-1840 - Pre-Railways



- Heritage structure
- Forest area

Source: (Buck 1904)

1842: The retail or shopping area was located at the Ridge.

1844: A small one-storeyed house called the Tendril Cottage and the Dalzelle's Estate were built.

1845: Kali Bari Temple was built.

1847: The idea of a rail link to Shimla was presented by a correspondent of the Delhi Gazette for swift troop movement.

1848: Government Model Boys Senior Secondary School was built.

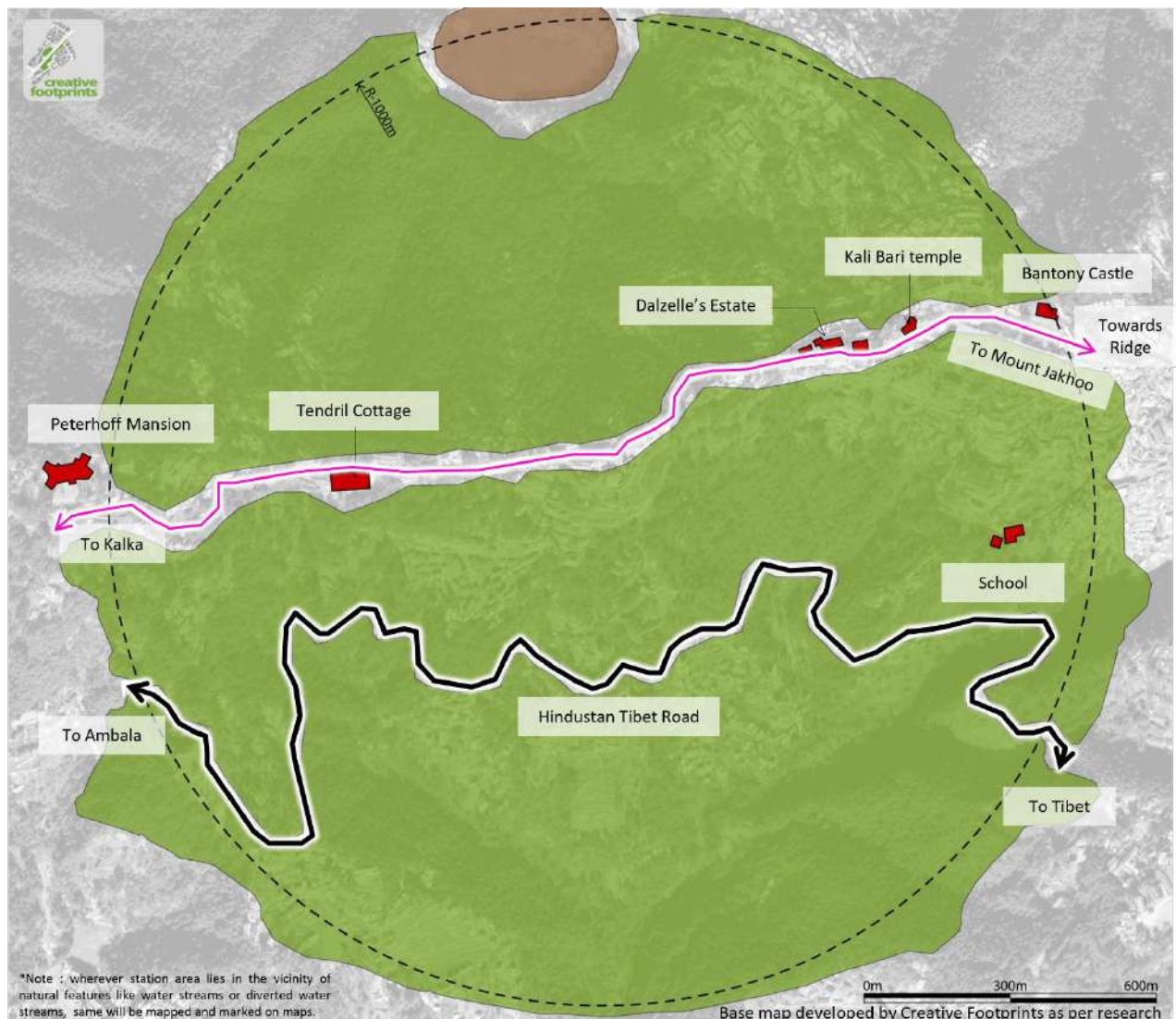
1856: Before the Railways, the mode of travel to the hills was by Jampans (a sedan with two poles), ponies or mules. With the construction of the Hindustan Tibet Road, bullock cart service for goods, and tonga service for mails and passengers, were introduced.

1863: Peter Hoff Mansion was built for Viceroy and Governor Generals.

1880: Bantony Castle was established.

(Map 10: Shimla 1842-1880 - Pre-Railways - Development of Structures) shows the increase in rate of development along the route.

Map 10: Shimla 1842-1880 - Pre-Railways - Development of Structures



Source: (Buck 1904)

- Heritage structure
- Forest area

2.2 INCEPTION OF SHIMLA RAILWAYS

2.2.1 Survey and Start

1884-85: Kalka to Simla route of 68 miles surveyed. Recommendation of the two-foot gauge Rail track was set aside as the army found this unacceptable, and the standard hill Railways 30-inch Narrow Gauge was adopted. *Map 11: Shimla 1884-1902 - Survey of Land* shows the path that was surveyed before Railways were laid.

Construction of Army Headquarters began in 1882 and was completed by March 1885.

1890: Kaithu Jail was built.

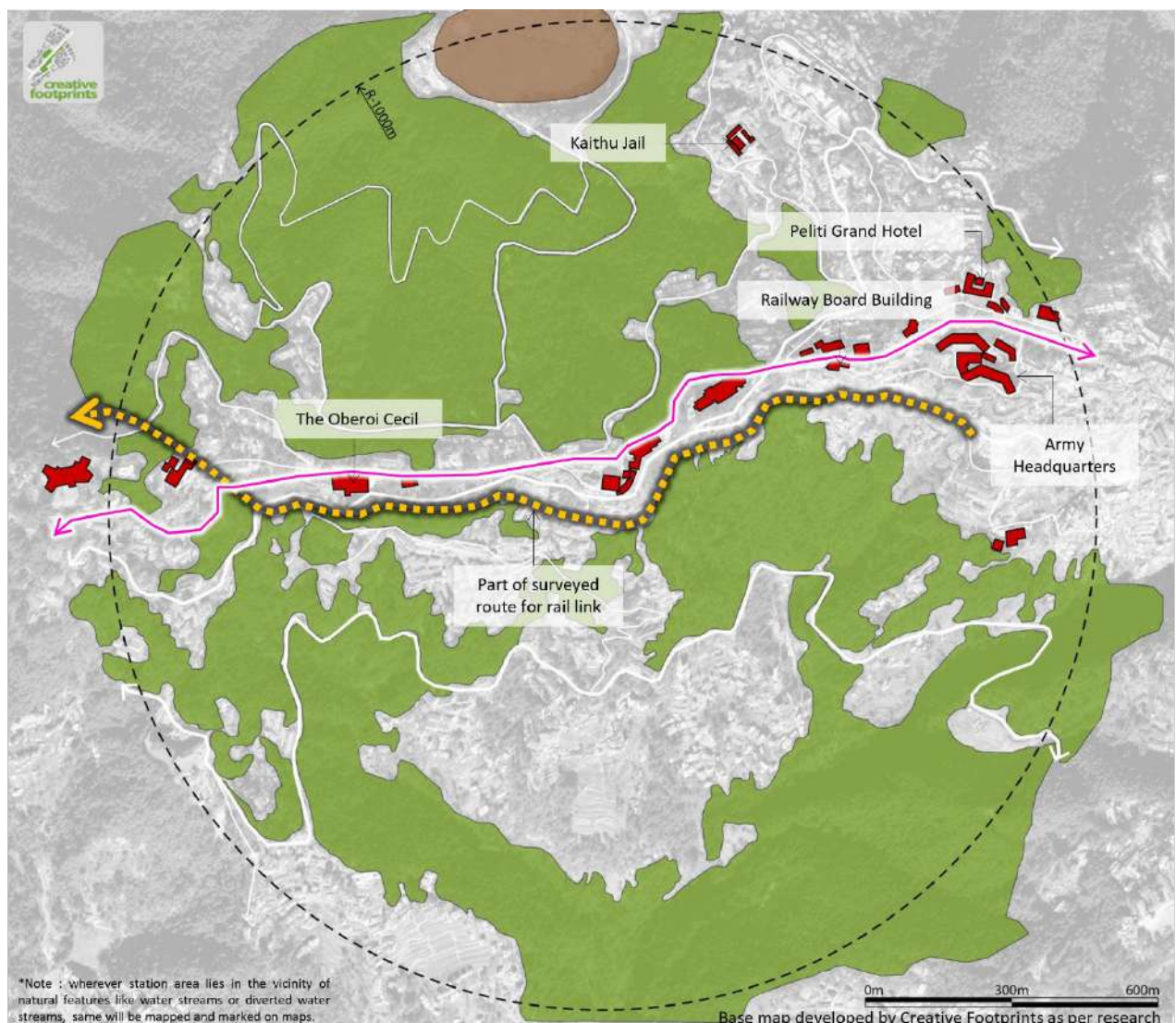
1892: The largest and well-known Peliti Grand Hotel was built.

1897: Railway Board building was constructed.

1899: Construction of the Shimla Railway station initiated.

1902: The Oberoi Cecil was built in 1902, restored and refurbished in 1997, and is now a prominent hotel of Shimla.

Map 11: Shimla 1884-1902 - Survey of Land



- Heritage structure
- Forest area

Source: (Buck 1904)

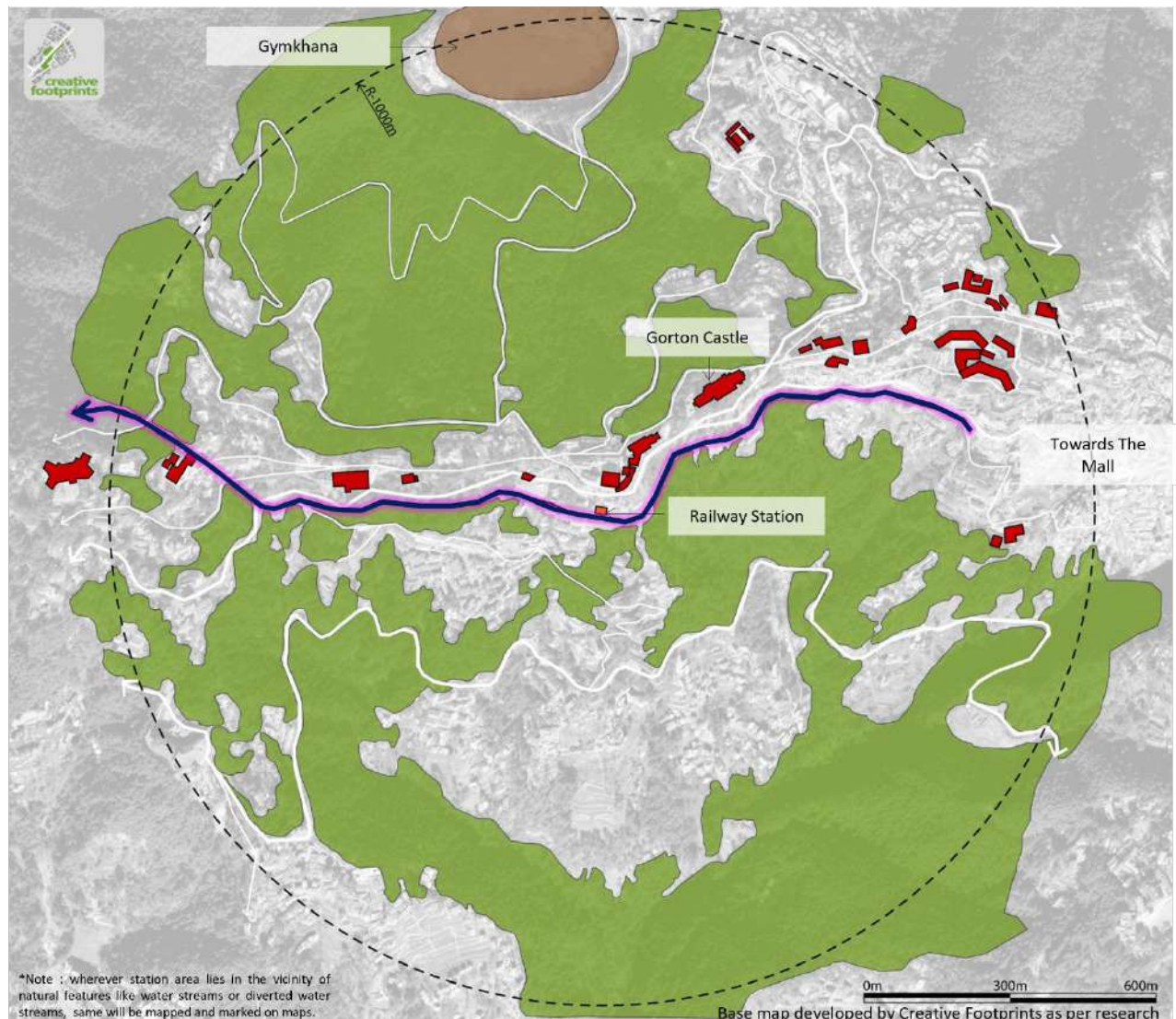
2.2.2 Kalka-Shimla Line

1903: The line was opened to public traffic, making Shimla more accessible. The Kalka-Shimla Railway led to continual technology transfers between Europe (Great Britain, Germany) to the Indian subcontinent. The arrival of the Rail line boosted business in Shimla, and goods could now be transferred conveniently. Annandale Race course was converted into the Gymkhana. The Mall, which was seemingly neglected, came to life with the influx of British officers and residents.

1904: Gorton Castle was built.

Map 12: Shimla 1903-1914 - Kalka-Shimla Railway, Map 13: Shimla 1915-1991 - Development and Changes, Map 14: Shimla – Present-day Linkages, Map 15: Shimla – Present-day Interchange Nodes and Map 16: Shimla – Present-day Surroundings shows the alignment of the Kalka-Shimla Line and range of development after its operation.

Map 12: Shimla 1903-1914 - Kalka-Shimla Railway



Source: (Buck 1904)

- Railway track
- Shimla Railway Station
- Heritage structure
- Forest area

2.3 COMING OF THE RAILWAYS

2.3.1 Changes over Time

1915: Shimla Sanitarium and Hospital were built.

1921: Further additions were made to the Shimla station to accommodate new functions. The Crowborough Officers Rest House was built.

1925: Central Assembly Council Chamber (renamed Vidhan Sabha) was built.

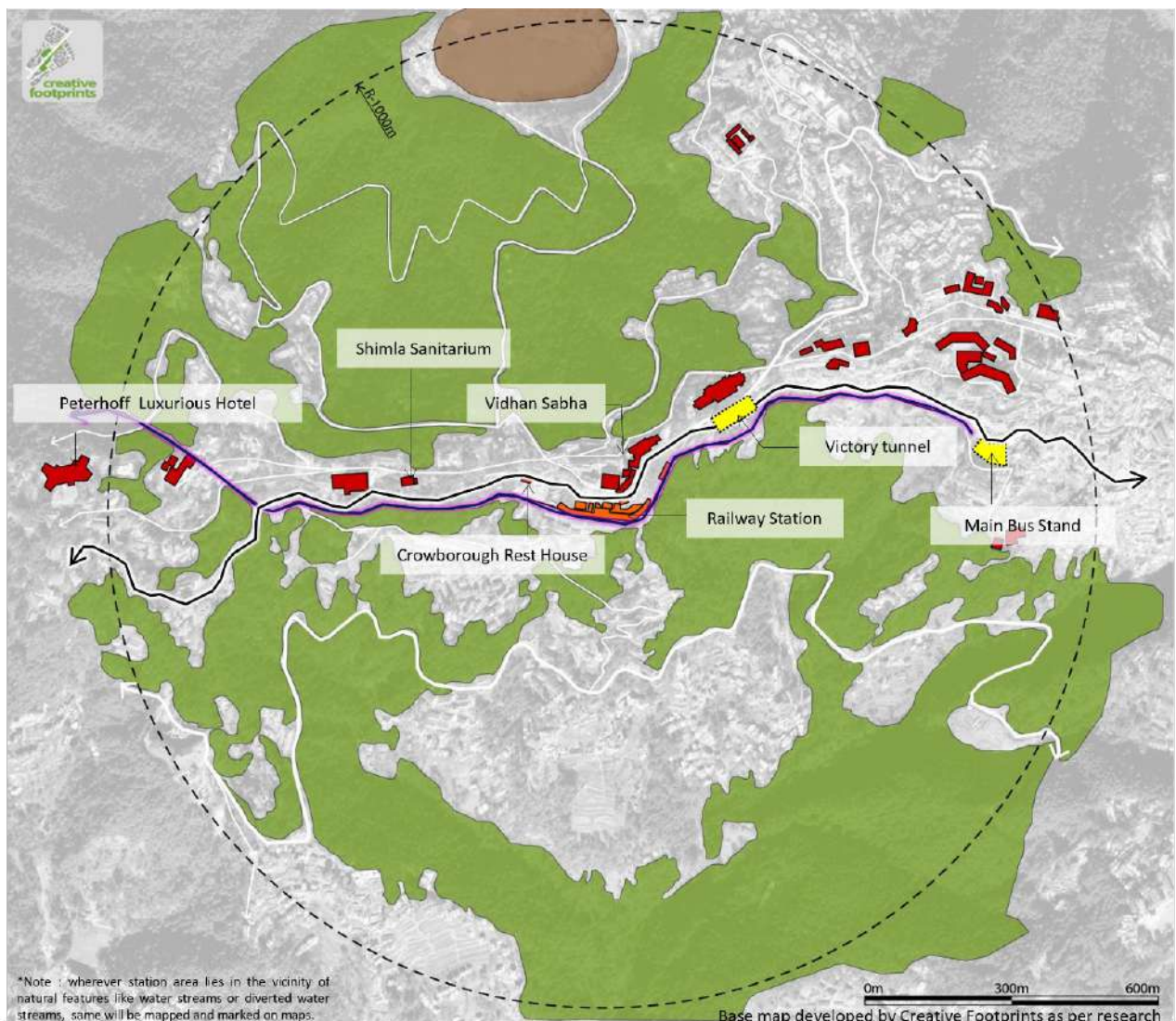
1944: Due to heavy snowfall, the roof of the platform of the Shimla Railway Station collapsed. Sanction for converting the station into a double storey structure was granted.

1945: Construction and opening of Victory tunnel to the Railway station, and the main Bus stand, commenced. After Independence, the Peterhoff Building served as Punjab High Court.

1986-87: Railway Station Building was upgraded.

1991: Peterhoff Mansion was reconstructed and converted into a luxurious hotel.

Map 13: Shimla 1915-1991 - Development and Changes



Source: (Buck 1904)

- Railway track
- Shimla Railway Station
- Heritage structure
- Forest area

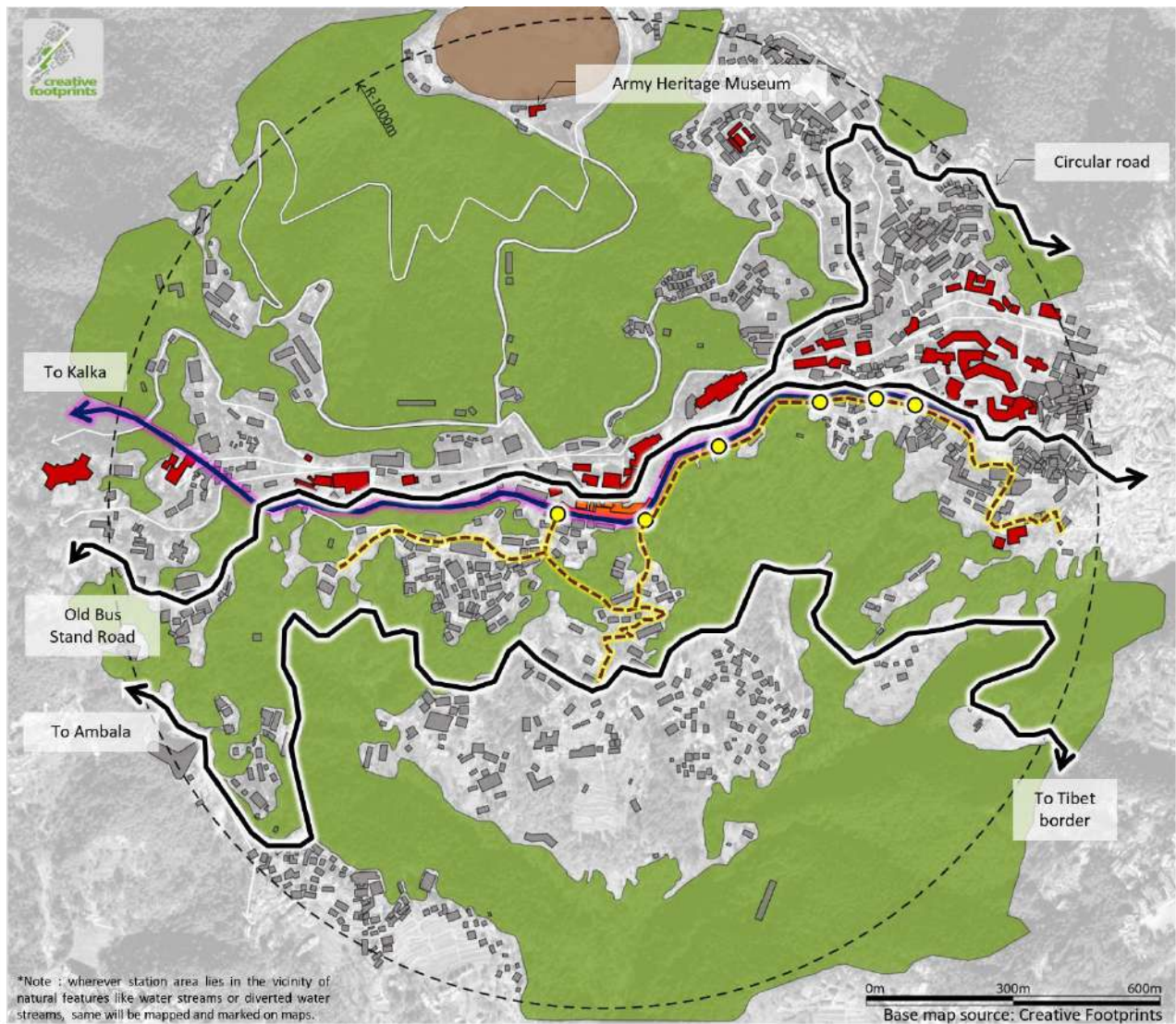
2.4 WORLD HERITAGE

2.4.1 Linkages: Old and New

2006: Army Heritage Museum was established.

2008: Track declared as UNESCO world heritage site.

Map 14: Shimla – Present-day Linkages

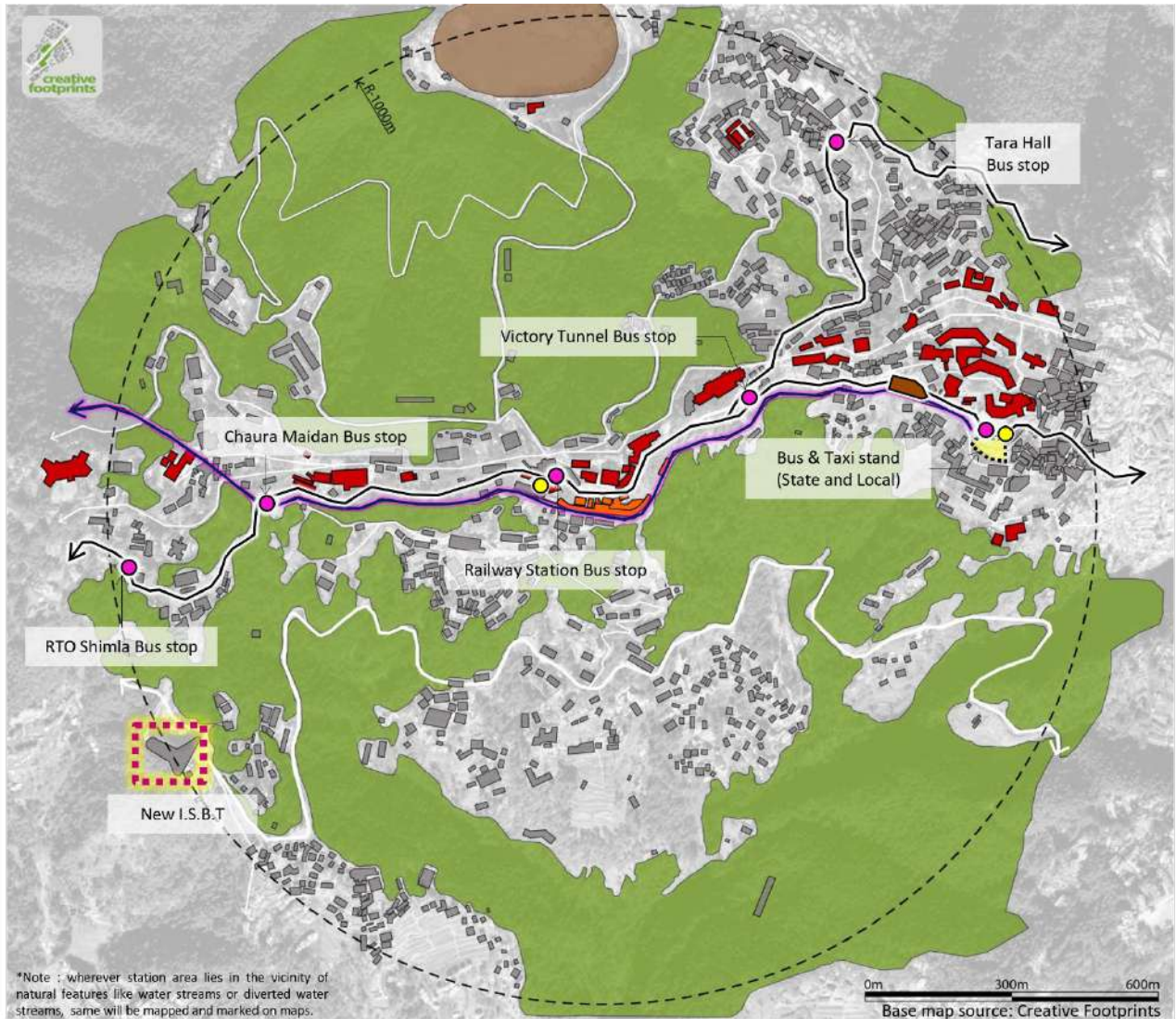


- Undesignated pedestrian access to station
- Undesignated entry/exit to station
- Railway track
- Main access roads to station
- Shimla Station Area
- Heritage structure
- Green & Forest Areas
- Annadale racecourse

2.4.2 Commuter Interchange Nodes

2011: The I.S.B.T was established 4km at Tutikandi to decongest Shimla, and provide high-end facility to tourists and locals.

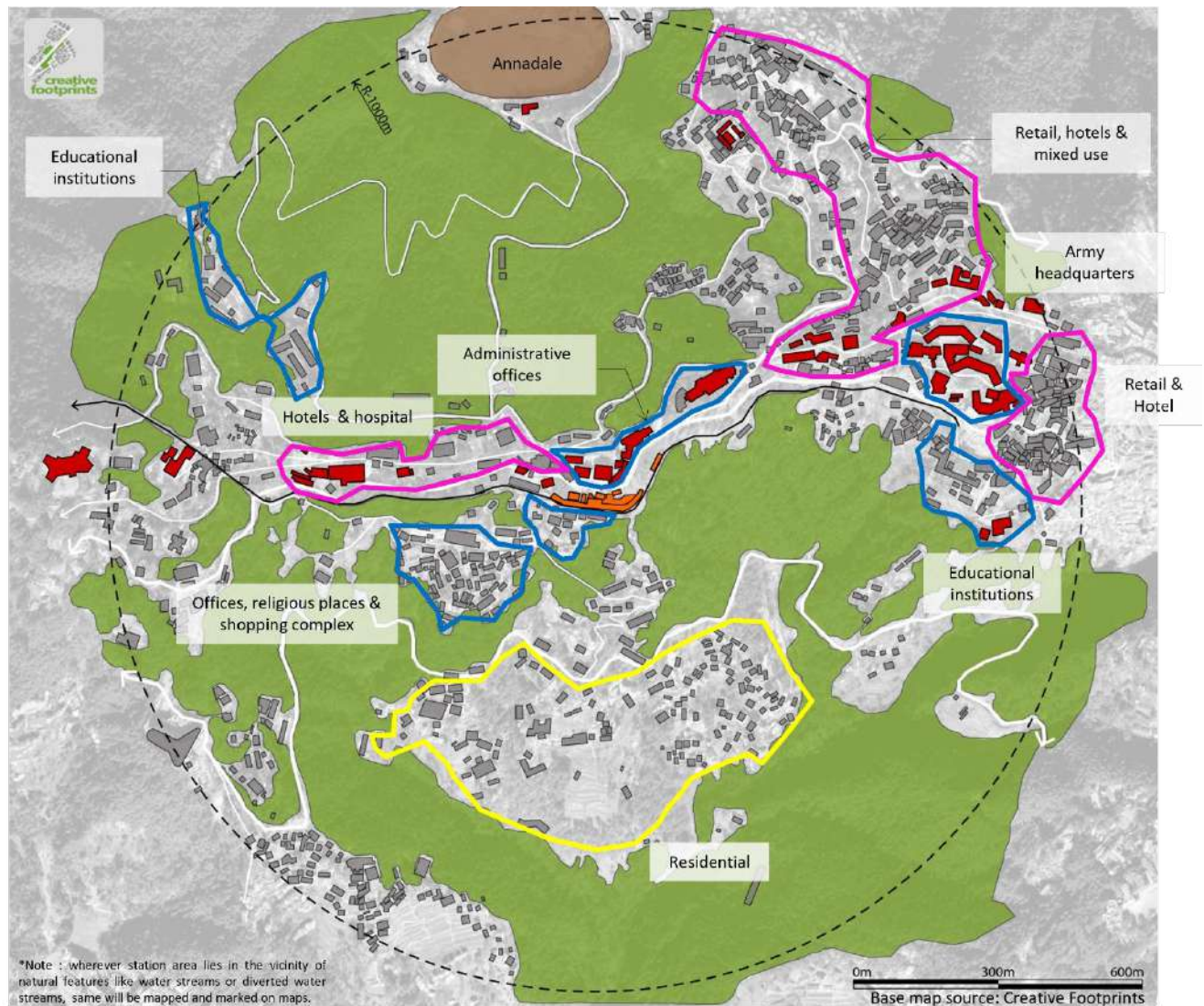
Map 15: Shimla – Present-day Interchange Nodes



- Taxi/cab interchange
- Bus interchange
- Railway track
- Main access roads to station
- Shimla Station Area
- Heritage structure
- Green & Forest Areas
- Annadale racecourse
- Parking

2.4.3 Shimla Surroundings

Map 16: Shimla – Present-day Surroundings



- Shimla Station Area
- Heritage structure
- Green & Forest Areas

Section 03 Egmore Railway Station

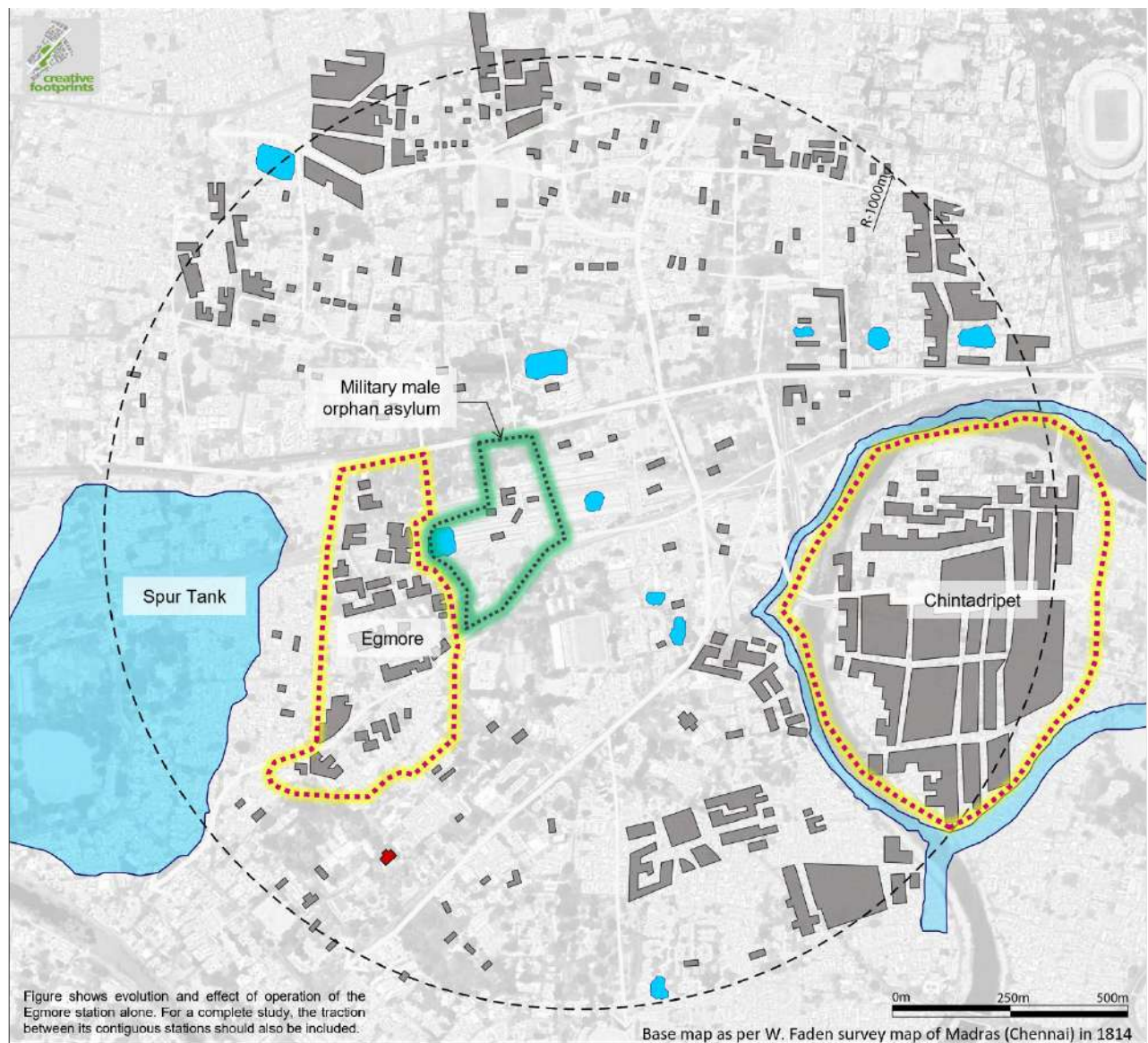
3.1 MADRAS BEFORE THE RAILWAYS

3.1.1 Pre-Railway Era (1626-1796)

1626-93: British East India Company (EIC) initially set up a factory to the north of Madras, in Armagon. Towns of Tondiarpet, Pursewaukam and Egmore were granted to EIC, which continued to rule from Fort George. By latter half of the 18th century, Madras became an important British naval base, and their administrative centre in southern India. Madras absorbed several neighbouring villages including Egmore and Chintadripet. (Map 17: Egmore 1626-1796 Pre-Railways) shows layout of area prefore installation of the Railways.

1796: Located at Egmore was the Military Male Asylum, and Anglo-Indian Orphanage and School. It was headed by Andrew Bell, the initiator of the Madras System for Schooling.

Map 17: Egmore 1626-1796 Pre-Railways



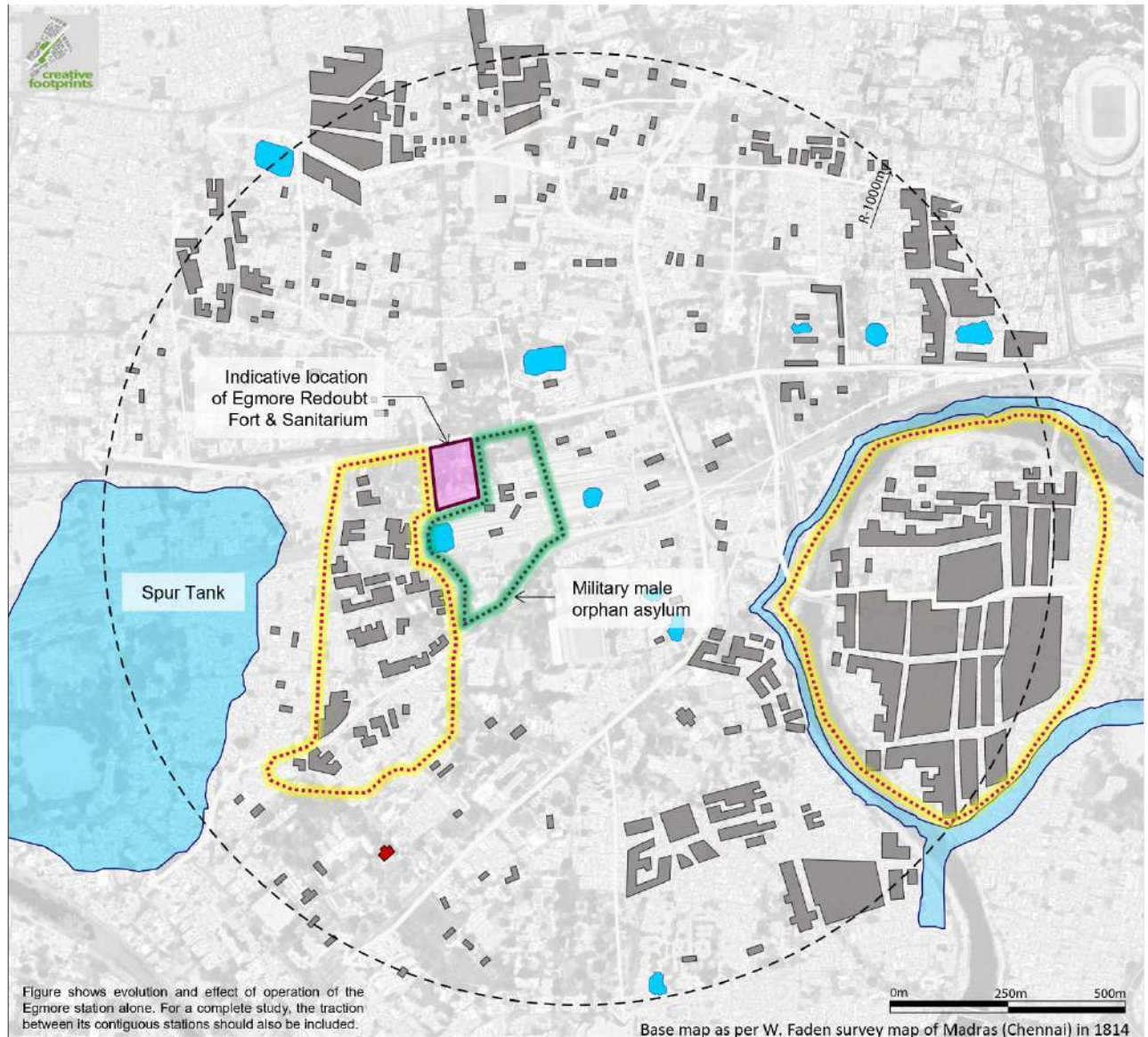
■ Heritage structure ■ Water bodies Source: (Faden 1816)

3.1.2 Egmore Redoubt

The Company's Military Engineers constructed suburban forts ('redoubts') at strategic locations with block-houses, batteries and mounted with cannons. These were outposts for the protection of the outlying quarters of Madras - and Egmore was one such redoubts. This redoubt was for protecting Egmore area, but also served as a health resort for the sick soldiers who arrived from England. (*Map 18: Egmore 1796-1799 - Egmore Redoubt*) shows location of the Egmore Redoubt.

Adjoining the precincts of the Redoubt were the premises of the Male Asylum and an Anglo-Indian orphanage.

Map 18: Egmore 1796-1799 - Egmore Redoubt



Source: (Faden 1816)

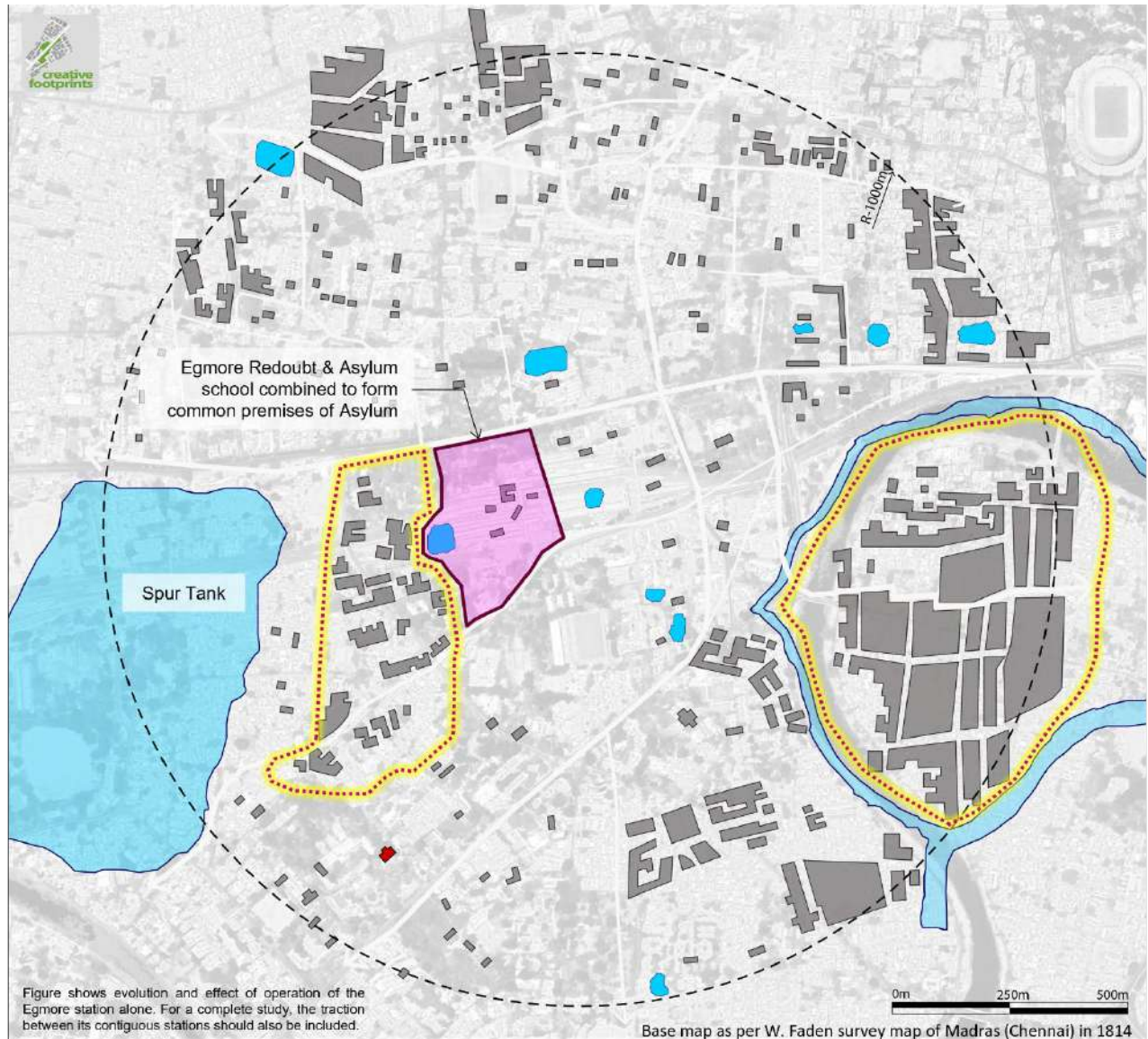
■ Heritage structure ■ Water bodies

3.1.3 Male Asylum and Redoubt

1799: After Tipu Sultan was killed, the need for the Redoubt ended. The British EIC gave the redoubt to the Asylum, and the two premises were provided with a common enclosure, area shown in (*Map 19: Egmore 1799 - Male Asylum and Redoubt*).

In the beginning of the 20th century, the Directors of the Asylum sold the Egmore Estate to the South Indian Railway Company - and it was converted into a habitation for Railway employees.

Map 19: Egmore 1799 - Male Asylum and Redoubt



Source: (Faden 1816)

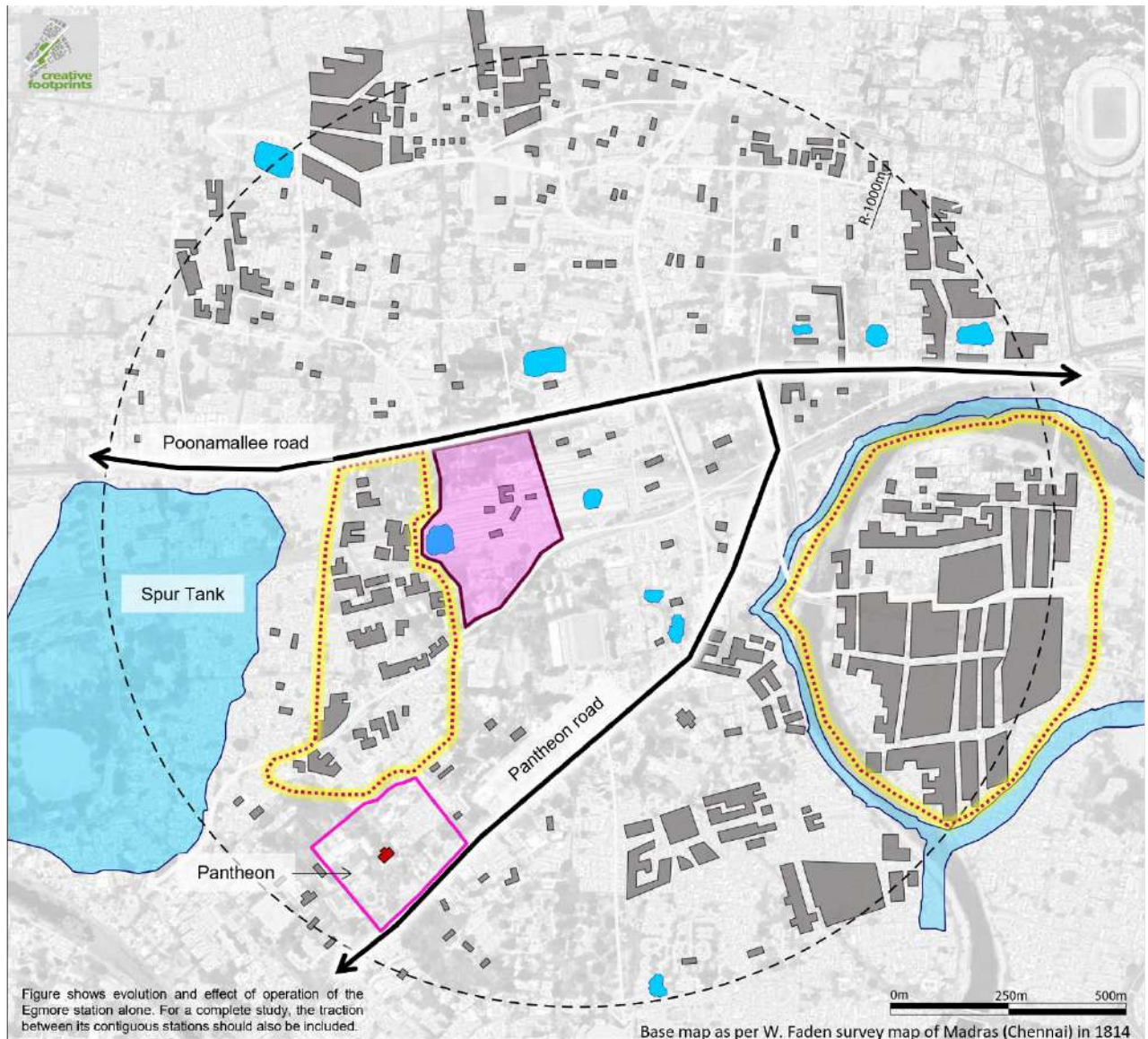
■ Heritage structure ■ Water bodies

3.1.4 Linkages

The main artery of Egmore was the Pantheon Road. The road's name derives from the Pantheon built by the British at Madras in the 18th century, and hosted different kinds of entertainment shows for them. Pantheon now forms the part of Government museum, built in 19th century.

(Map 20: Egmore 1800-1819 - Linkages and Map 21: Egmore 1820-1855 - Surroundings) shows the roads and different kinds of facilities that developed over time.

Map 20: Egmore 1800-1819 - Linkages



Source: (Faden 1816)

■ Heritage structure ■ Water bodies

3.1.5 Egmore Surroundings

1820: Regional Institute of Ophthalmology and Government Hospital (Egmore Eye Hospital), the oldest eye hospital in Asia, was shifted from Royapettah to Egmore.

1818-1821: St. Andrews Church, one of the oldest, was built to serve the Scottish community in Chennai.

1844: Maternity Hospital was built.

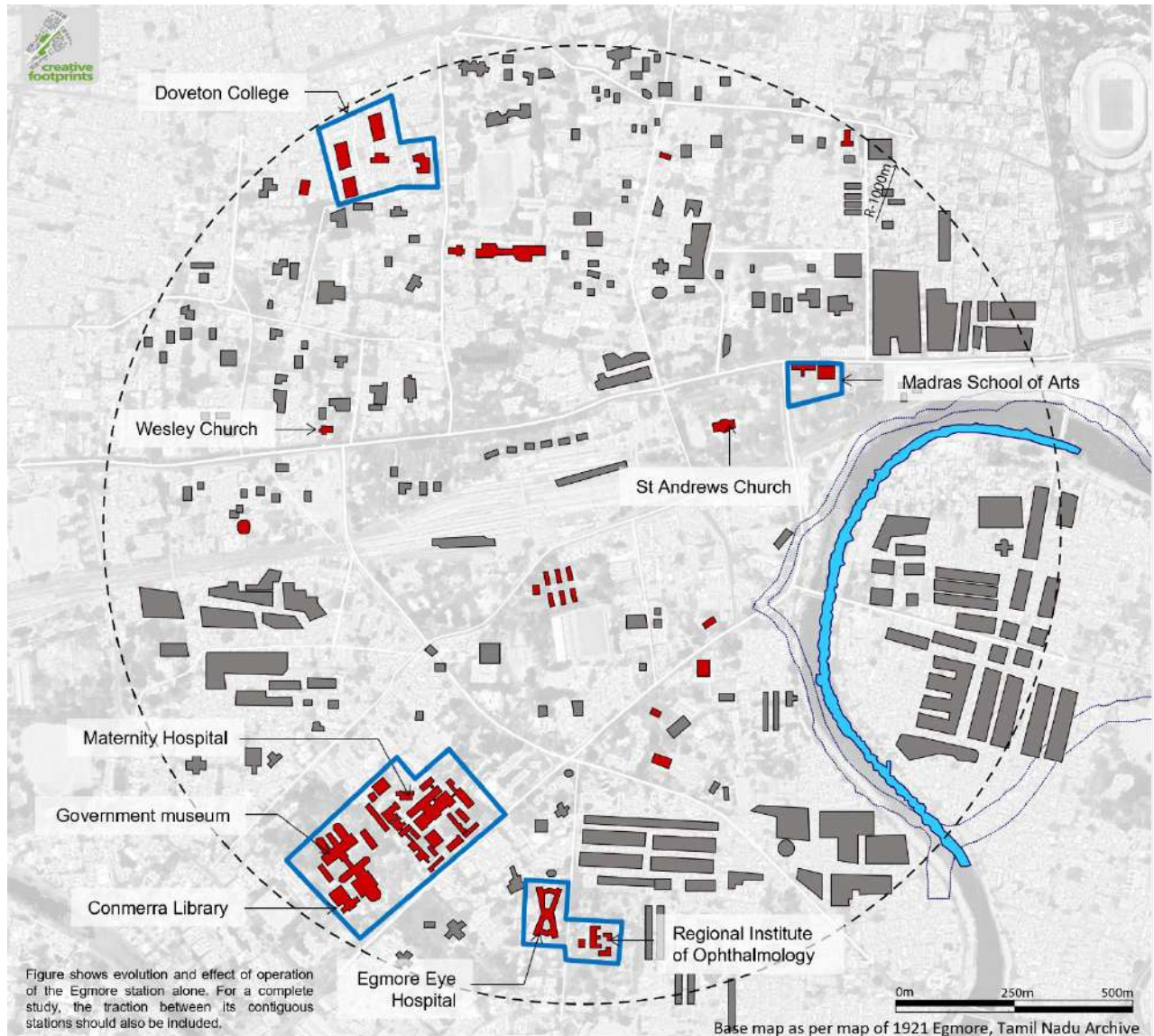
1850: Country's first fine arts institution, the Madras School of Arts, was established.

1851: Government Museum was established.

1855: Doveton College for Anglo-Indian boys was established in Vepery (one of the oldest suburbs).

Hospitals, school, churches, public buildings and other important establishments were built. The region was marked by booming trade.

Map 21: Egmore 1820-1855 - Surroundings



Source: (Faden 1816)

■ Heritage structure ■ Water bodies

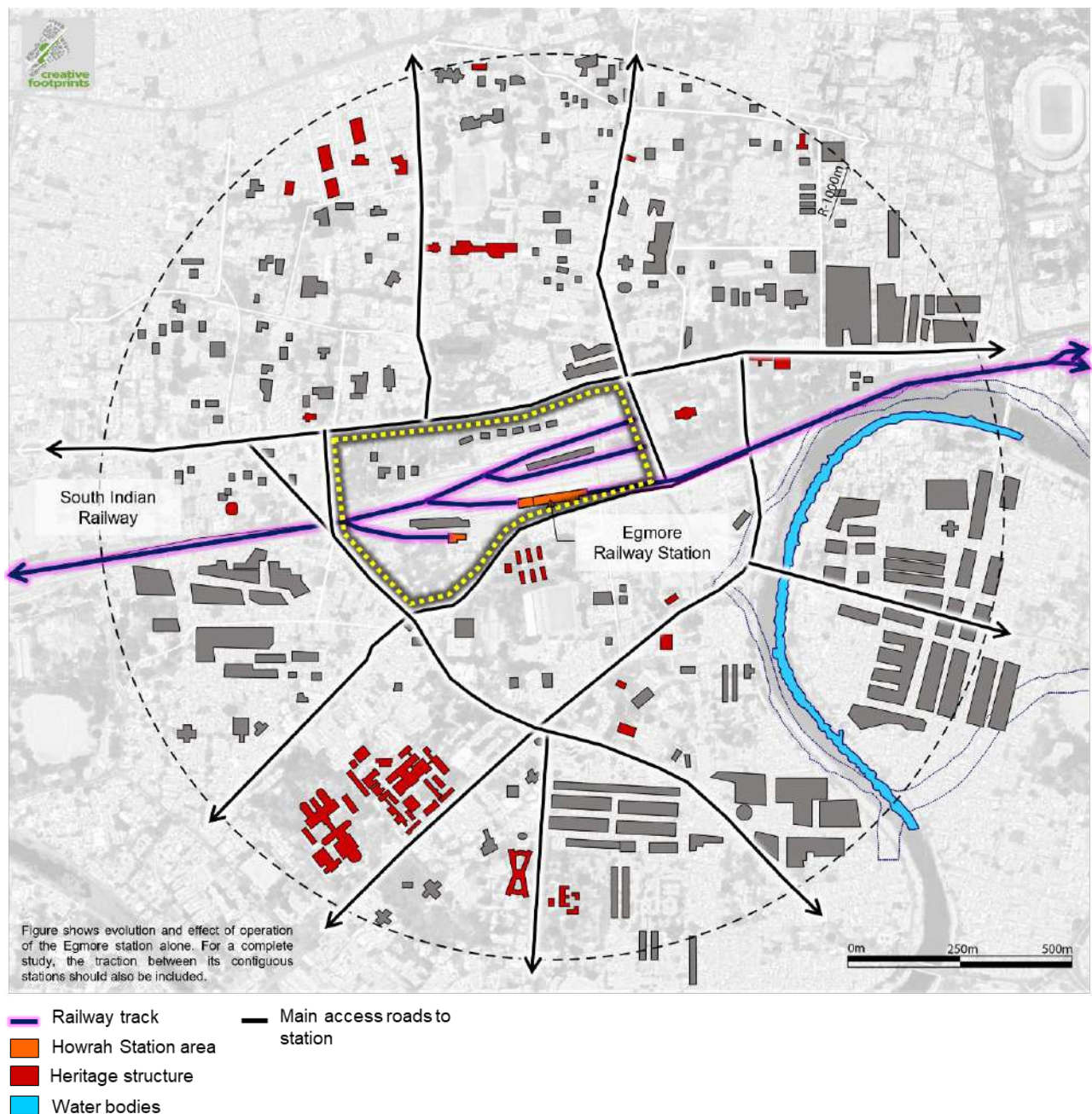
3.2 INCEPTION OF MADRAS RAILWAYS

3.2.1 Egmore Railway Station

1906-08: Egmore Railway station was constructed as a terminus of the South Indian Railway (SIR) Company by adopting the Egmore Redoubt. It is also said that the Station came up in a place that once used to store ammunition for the British (shown in *Map 22: Egmore – 1906-1908 – Construction of Egmore Railway Station*). The Station Building was constructed on 2.5 acres land, for which 1.8 acres was acquired from S. Pulney Andy, an English physician who initially refused to sell his property. Purchased at ₹1 lakh as compensation, the SIR invited Henry Irwin (chief engineer) to design a building to suit the traffic need.

1908: The Station Building was completed with a great range of waiting rooms, offices, restaurants, baggage rooms and Post Office inside the station.

Map 22: Egmore – 1906-1908 – Construction of Egmore Railway Station



3.3 TOWN AND RAILWAYS

3.3.1 Egmore Surroundings

1909: Tamil Nadu Archives Pathy along with administrative buildings and 6 record blocks was built.

1913: Regional Institute of Ophthalmology and Government Hospital were expanded.

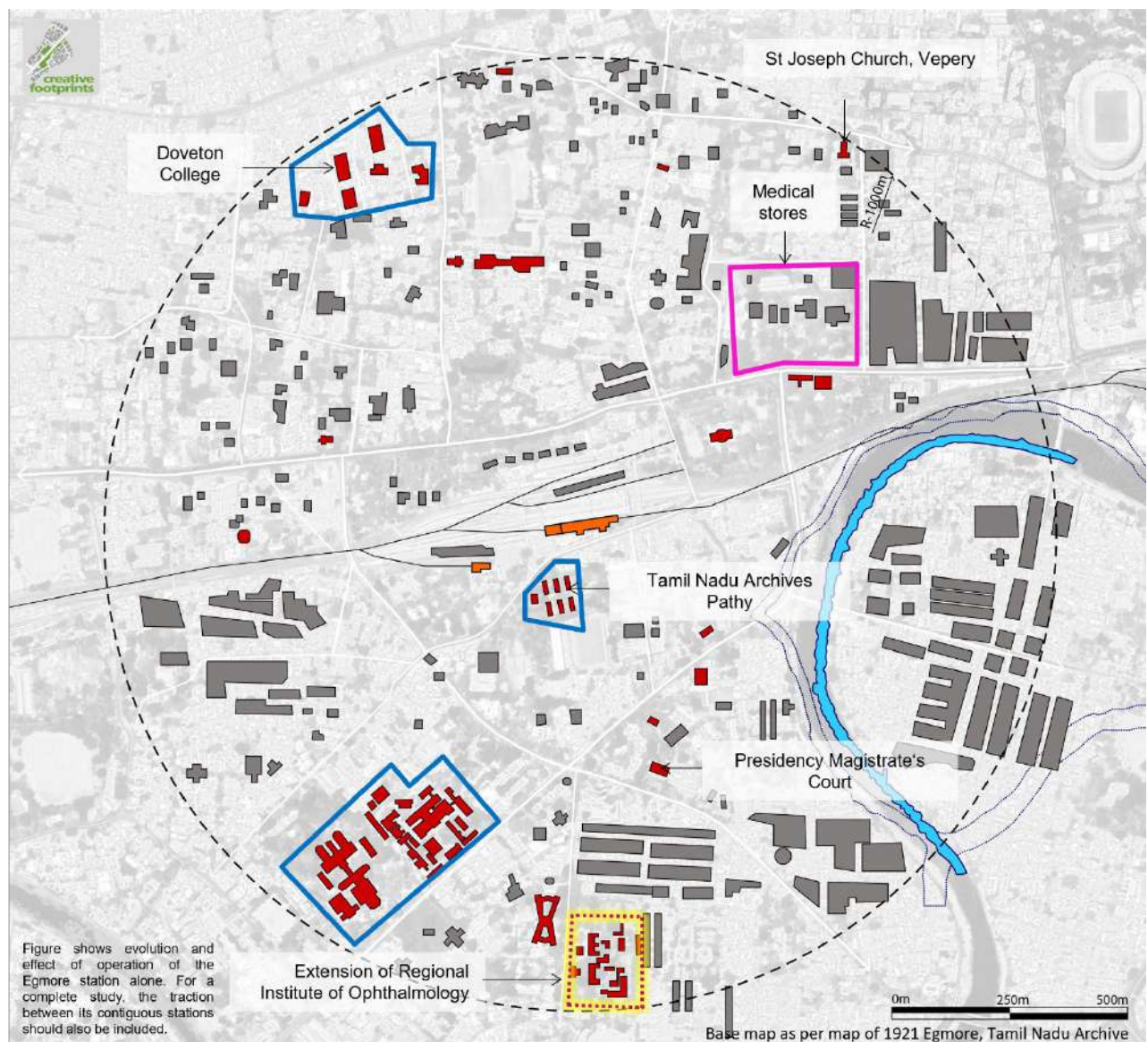
1916: Presidency Magistrate's Court came into force.

1928: Bishop Corrie High School and Doveton Protestant College amalgamated to form Doveton Corrie High School.

1929-38: 7th, 8th and 9th stack of Tamil Nadu Archives was built.

The surroundings were developing as a commercial place, eventually becoming a town, near the Egmore Railway Station (see *Map 23: Egmore 1909-1938 - Surroundings post Railways*).

Map 23: Egmore 1909-1938 - Surroundings post Railways



Howrah Station area

Heritage structure

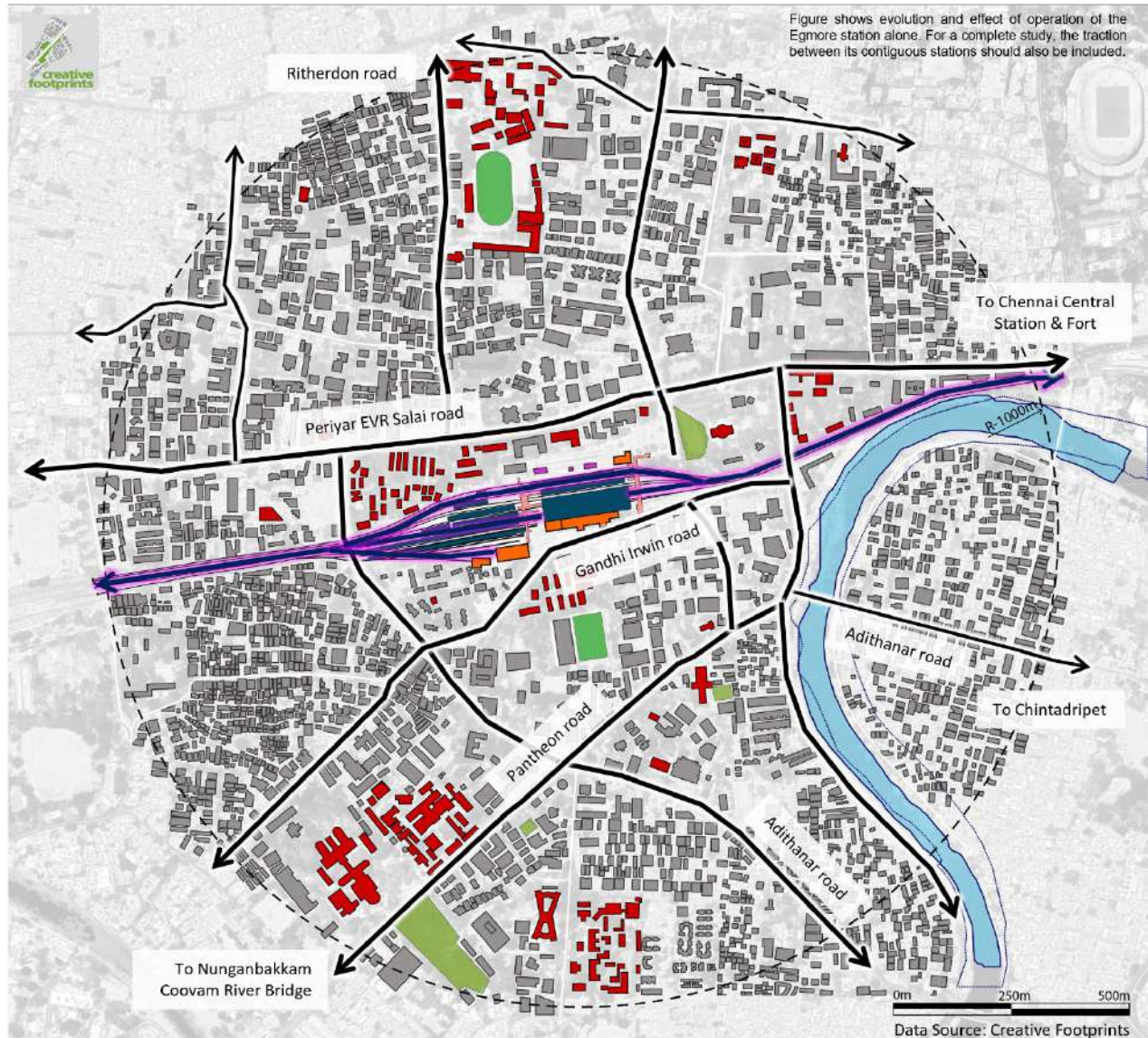
Water bodies

3.4 PRESENT SCENARIO

3.4.1 Linkages to Egmore

The linkages, nodes and infrastructure that evolved as a result of operation of the Egmore Stations are as shown in Map 24: *Egmore - Present-day Linkages*, Map 25: *Egmore - Present-day Interchange Nodes* and Map 26: *Egmore - Present-day Surrounding Uses*.

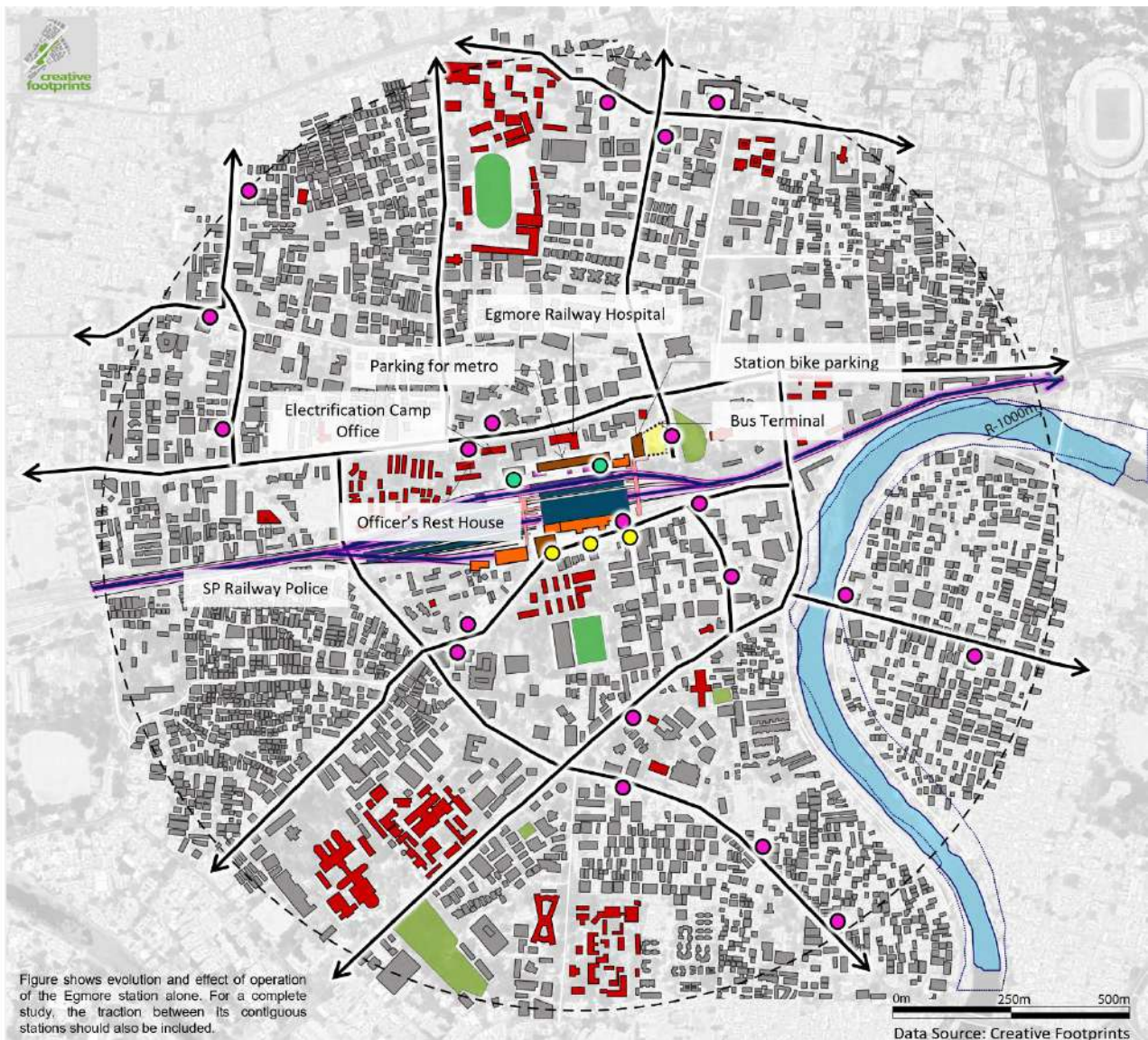
Map 24: Egmore - Present-day Linkages



- Railway track
- Main access roads to station
- Egmore Station area
- Platforms
- Heritage structure
- Open/ green space
- Stadium
- Water bodies

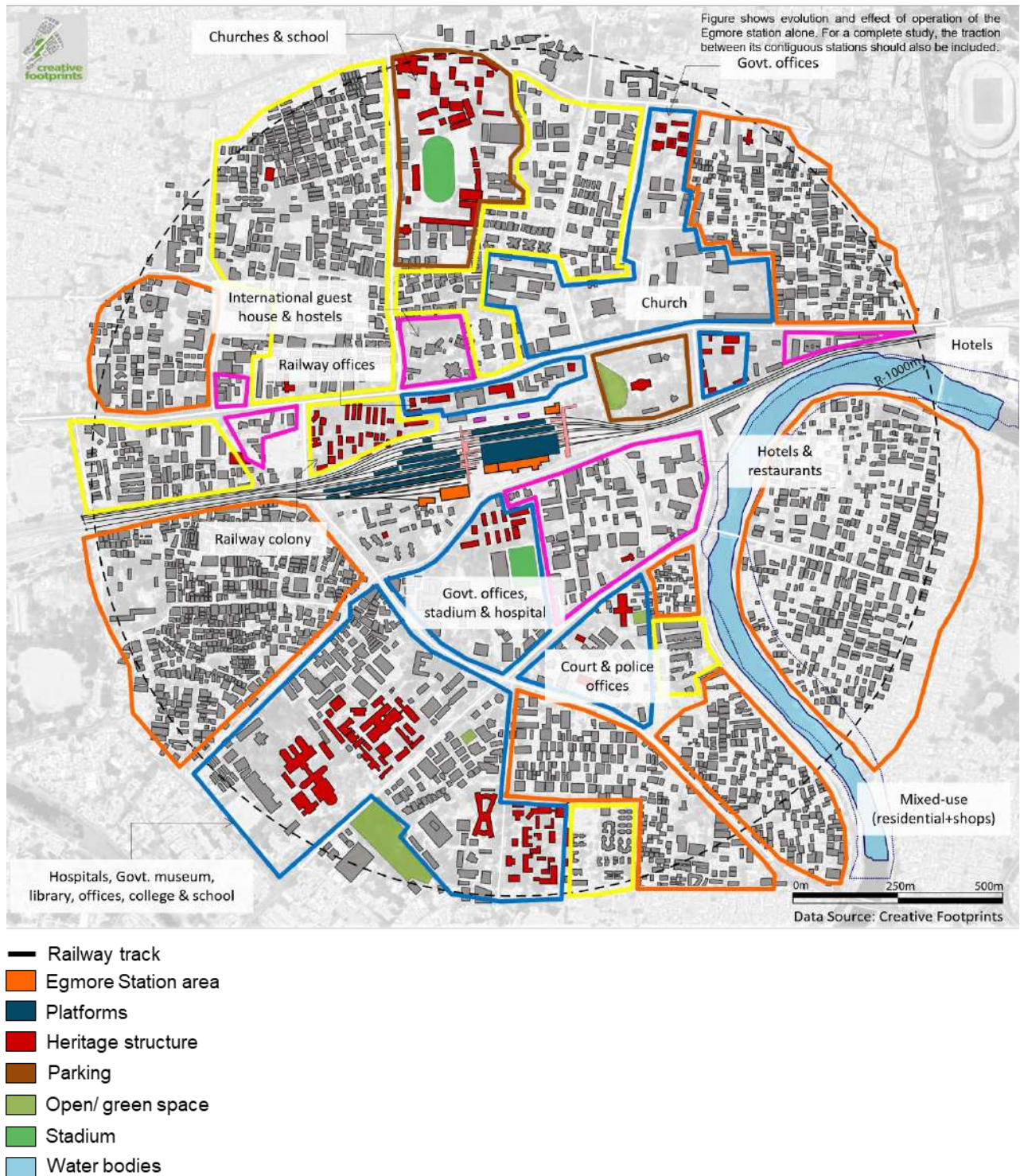
3.4.2 Interchange Nodes

Map 25: Egmore - Present-day Interchange Nodes



3.4.3 Surrounding Uses

Map 26: Egmore - Present-day Surrounding Uses



Appendix II: Comparative study of National Norms, Acts and Laws applicable to Heritage protection

Section 01 Findings UBBL 2016

Sections in Italics are verbatim from **The Unified Building Bye Laws for Delhi 2016**.

Table 11: Findings from National Norms and Acts – UBBL 2016

UBBL 2016			
S. No.	Provisions		Regulations
1.	Institutional Framework		Heritage Conservation Committee
2.	Grading/Listing		1.12 Grade I, II and III. <i>Listing does not prevent change of ownership or usage. However, change of use of such Listed Heritage Building/Listed Precinct is not permitted without the prior approval of the Heritage Conservation Committee. Use should be in harmony with the said Listed Heritage site.</i>
	Grade I	Category	National or Historic importance, All natural sites.
		Scope for Changes	1. <i>No interventions be permitted either on exterior or interior.</i> 2. <i>Absolutely essential and minimum changes, in the interest of strengthening and prolonging the life of the buildings/precincts.</i>
		Procedure (Development Permission)	<i>Development permission for the changes shall be given on the advice of the Heritage Conservation Committee.</i>
	Grade II	Category	<i>Regional or Local importance</i>
		Scope for Changes	- Grade-II (A)- <i>Internal changes and adaptive re-use may, by and large, be allowed -- but subject to strict scrutiny.</i> - Grade-II (B)- <i>In addition to the above, extension or additional building in the same plot or compound could, in certain circumstances.</i>
		Procedure (Development Permission)	<i>Development permission for the changes shall be given on the advice of the Heritage Conservation Committee.</i>
	Grade III	Category	<i>Buildings and precincts of importance for Townscape.</i>
		Scope for Changes	1. <i>Internal changes and adaptive re-use may, by and large, be allowed.</i> 2. <i>For extensions and additional buildings on the same plot or compound, any change should be such that they are in harmony with -- and should be such that they do not detract from -- the existing Heritage Building(s)/Precinct(s).</i>
		Procedure (Development Permission)	3. <i>Development permission for the changes shall be given on the advice of the Heritage Conservation Committee.</i>
3.	General Guidelines for development/ redevelopment/ repairs	Signage Design and Controls	1.13 Signs and Outdoor Display Structures Including Street Furniture on Heritage Sites: <i>Commissioner, MCD/Vice-Chairman DDA/Chairman NDMC on the advice of the Heritage Conservation Committee shall frame regulations or guidelines for signages, outdoor display structures, and street furniture on Heritage sites.</i>

UBBL 2016		
S. No.	Provisions	Regulations
	etc. within Heritage area/ Precinct/ Asset/ Building	Skyline 1.10 Maintaining Skyline and Architectural Harmony: After guidelines are framed, building(s) within Heritage precincts or in the vicinity of Heritage sites shall maintain the skyline in the precinct -- and follow the architectural style (without any high-rise or multistoried development) as may be existing in the surrounding area, so as not to diminish or destroy the value and beauty of, or the view from, the said heritage sites. The development within the precinct or in the vicinity of heritage sites shall be in accordance with the guidelines framed by the Competent Authority on the advice of the Heritage Conservation Committee -- or separate regulations/guidelines if any, prescribed for respective zones by Competent Authority. Others 1.8 Road Widening: Widening of the existing roads under the Master Plan /Zonal Development Plan or in the Layout Plan shall be carried out considering the existing Heritage Buildings (even if they are not included in a Heritage Precinct), and/or which may affect listed natural features and areas.
4	New construction/ Development/ Re- Development/ Addition/ Alterations or Extensions to Existing Structure	1.3 Restrictions on Development/Re-development/Repairs etc.: No development or redevelopment or engineering operation; or Additions/alterations, repairs, renovations including painting of the building; or Replacement of special features; or Plastering; or Demolition of any part thereof, of the said Listed Buildings or Listed Precincts or Listed Natural Feature Areas shall be allowed except with the prior permission of. Before granting such permission, the agency concerned shall consult the Heritage Conservation Committee to be appointed by the Government, and shall act in accordance with the advice of the Heritage Conservation Committee. Provided that, before granting any permission for demolition or major alterations/additions to Listed Buildings (or buildings within Listed Streets or Precincts, or construction at any Listed Natural Features, or alternation of boundaries of any Listed Natural Feature Areas, objections and suggestions from the public shall be invited, and shall be considered by the Heritage Conservation Committee. Provided that, only in exceptional cases, with reasons to be recorded in writing, may refer the matter back to the Heritage Conservation Committee for reconsideration.
5	Demolition of Heritage Building	1.16 Implications of Listing as Heritage Buildings: The Regulations do not amount to any blanket prevention of demolition or of changes to Heritage Buildings. The only requirement is to obtain clearance from and Heritage Conservation Committee from Heritage point of view.
6	Selling or leasing out of the Heritage Property	1.17 Ownership not affected: Sale and purchase of Heritage Buildings do not require any permission from or Heritage Conservation Committee. The Regulations do not affect the ownership or usage. However, such usage should be in harmony with the said Listed Precincts/Buildings.

UBBL 2016		
S. No.	Provisions	Regulations
7	Others	1.11 Restrictive Covenants: Restrictions existing as on date of this Notification imposed under the covenants, terms and conditions on the leasehold plots either by shall continue to be imposed in addition to Development Control Regulations. However, in case of any conflict with the Heritage preservation interest/Environmental conservation, this Heritage Regulation shall prevail. 1.6 Alteration/Modification/Relaxation in Development Norms: On the advice of the said Heritage Conservation Committee (to be appointed by the Government), and with reasons to be recorded in writing, the shall follow the procedure as per to alter, modify or relax the Development Control Norms prescribed in the MPD, or Building Bye-laws of, if required, for the Conservation or Preservation or Retention of historic or aesthetic or cultural or architectural or environmental quality of any Heritage site.
8	Penalties	(1.4) Violation of the regulations shall be punishable under the provisions regarding unauthorized development. In case of proven deliberate neglect of and/or damage to Heritage Buildings and Heritage Precincts, or if the Building is allowed to be damaged or destroyed due to neglect or any other reason, in addition to penal action provided under the concerned Act, no permission to construct any new building shall be granted on the site if a Heritage Building or Building in a Heritage Precinct is damaged or pulled down without appropriate permission from. It shall be open to the Heritage Conservation Committee to consider a request for rebuilding/reconstruction of a Heritage Building that was unauthorizedly demolished or damaged, provided that the total built-up area in all floors put together in such new construction is not in excess of the total built-up area in all floors put together in the original Heritage Building in the same form and style -- in addition to other controls that may be specified.
9	Incentives	1.9 Incentive Uses for Heritage Buildings: In cases of Buildings located in Non-Commercial Use zones included in the Heritage Conservation List, if the owner/owners agree to maintain the Listed Heritage Building as it is in the existing state, and to preserve its Heritage state with due repairs, and the owner/owners/lessees give a written undertaking to the effect, the owner/owners/lessees may be allowed -- with the approval of the Heritage Conservation Committee within Permissible Use zone -- to convert part or whole thereof of the Non-Commercial Area within such a Heritage Building -- to Commercial/Office /Hotel use. Provided that if the Heritage Building is not maintained suitably, or if the Heritage value of the building is spoiled in any manner, the Commercial/Office/Hotel use shall be disallowed.
10	Owner's Responsibility	1.2 Responsibility of the Owners of Heritage Buildings: It shall be the duty of the owners of Heritage Buildings, and buildings in Heritage Precincts or in Heritage Streets, to carry out regular repairs and maintenance of the buildings. The Government, the Municipal Corporations or the Local Bodies and Authorities concerned shall not be responsible for such repair and maintenance -- except for the buildings owned by the Government, the Municipal Corporations or the other local bodies.

Section 02 Findings from AMASR Act (Amendment and Validation), 2010

Sections in Italics are verbatim from **The Ancient Monuments and Archaeological Sites and Remains (Amendment and Validation) Act, 2010**.

Table 12: Findings from National Norms and Acts – AMASR Act, 2010

AMASR Act (Amendment and Validation), 2010		
S. No.	Provisions	Regulations
1	Prohibited	<i>Prohibited Zone Provision:</i> <i>Every area, beginning at the limit of the Protected Area or the Protected Monument, as the case may be, and extending to a distance of one hundred (100) metre in all directions, shall be the Prohibited Area in respect of such Protected Area or Protected Monument.</i> <i>Same as otherwise provided in section 20c, no person, other than an Archaeological Officer, shall carry out any construction in any Prohibited Area.</i>
2	Regulated	<i>Regulated Zone Provision:</i> <i>Every area, beginning at the limit of Prohibited Area in respect of every ancient monument and archaeological site and remains, declared as of national importance under sections 3 and 4, and extending to a distance of two hundred (200) metre in all directions, shall be the Regulated Area in respect of every ancient monument and archaeological site and remains.</i> <i>Provided that the Central Government may, by notification in the Official Gazette, specify an area more than two hundred (200) metre to be the Regulated Area, having regard to the classification of any Protected Monument or Protected Area, as the case may be, under section 4A.</i>
3	Others	<i>Heritage Bye-Laws:</i> The competent authority in consultation with Indian National Trust for Arts and Cultural Heritage (INTACH), being a trust registered under the Indian Trusts Act, 1882 (2 of 1882), or such other expert Heritage bodies as may be notified by the Central Government, shall prepare Heritage Bye-Laws in respect of each Protected Monument and Protected Area. <i>The Heritage Bye-Laws referred to in sub-section (1) shall, in addition to such matters as may be prescribed, include matters relating to Heritage Controls such as elevations, facades, drainage systems, roads and service infrastructure (including electric poles, water and sewer pipelines).</i>
4	Penalties	<i>Punishment for construction, etc., in Prohibited Area:</i> Whoever raises, on and after the date on which the Ancient Monuments and Archaeological Sites and Remains (Amendment and Validation) Bill, 2010, receives the assent of the President, any construction in the Prohibited Area, shall be punishable with imprisonment not exceeding two years or with fine which may extend to one lakh rupees (Rs. 1 lakh) or with both. <i>Punishment for construction, etc., in Regulated Area:</i> Whoever raises, on and after the date on which the Ancient Monuments and Archaeological Sites and Remains (Amendment and Validation) Bill, 2010, receives the assent of the President, any construction in the Regulated Area without the previous permission of the competent authority or in contravention of the permission granted by the competent authority, shall be punishable with imprisonment not exceeding two years or with fine which may extend to one lakh rupees (Rs. 1 lakh) or with both. <i>Offences by Officers of Government:</i> If any officer of the Central Government enters into or acquiesces in any agreement to do, abstains from doing, permits, conceals or connives at any act or thing whereby any construction or re-construction takes place in a Prohibited Area or Regulated Area, s/he shall be punishable with imprisonment for a term which may extend to three years, or with fine, or with both.

AMASR Act (Amendment and Validation), 2010

S. No.	Provisions	Regulations
5	Incentives	Compensation for loss or damage: Any owner or occupier of land, who has sustained any loss or damage or any diminution of profits from the land by reason of any entry on or excavations in such land or the exercise of any other power conferred by this Act, shall be paid compensation by the Central Government for such loss, damage or diminution of profits.
6	Mechanism for Sanction	Grant of permission by competent authority within Regulated Area: - Every application for grant of permission under section 20c of this Act shall be made to the competent authority in such manner as may be prescribed. - The competent authority shall, within fifteen (15) days of the receipt of the application, forward the same to the Authority to consider and intimate impact of such construction (including the impact of large-scale development project, public project and project essential to the public) having regard to the Heritage Bye-Laws relating to the concerned Protected Monument or Protected Area, as the case may be. Provided that the Central Government may prescribe the category of applications in respect of which the permission may be granted under this sub-section, and the application shall be referred to the Authority for its recommendations. - The Authority shall, within two (2) months from the date of receipt of application under sub-section (2), intimate to the competent authority impact of such construction (including the impact of large-scale development project, public project and project essential to the public). - The competent authority shall, within one (1) month of the receipt of intimation from the Authority under sub-section (3), either grant permission or refuse the same as recommended by the Authority. - The recommendations of the Authority shall be final. - In case the competent authority refuses to grant permission under this section, it shall, by order in writing, after giving an opportunity to the concerned person, intimate such refusal within three (3) months from the date of receipt of the application to the applicant, the Central Government and the Authority. - If the competent authority, after grant of the permission under sub-section (4) and during the carrying out of the repair or renovation work or re-construction of building or construction referred to in that sub-section, is of the opinion (on the basis of material in his/her possession or otherwise) that such repair or renovation work or re-construction of building or construction is likely to have an adverse impact on the preservation, safety, security or access to the monument considerably, it may refer the same to the Authority for its recommendations -- and if so recommended, withdraw the permission granted under sub-section (4) if so required.

Section 03 Findings from Model Building Bye-Laws, 2016

Sections in Italics are verbatim from Chapter 12 “Conservation of Heritage Sites Including Heritage Buildings, Heritage Precincts and Natural Feature Areas” of the **Model Building Bye-Laws- 2016**, Town and Country Planning Organisation, Ministry of Urban Development, Government of India.

Table 13: Findings from National Norms and Acts – Model Heritage Regulations, TCPO, MoUD

Model Building Bye-Laws, TCPO, MoUD India 2016		
S. No.	Provisions	Regulations
1	Grading/Listing	<i>7.1 Grade I, II, III and Heritage Precincts</i> <i>The Regulations do not amount to any blanket prevention of changes to Heritage Buildings. The only requirement is to obtain clearance from the Commissioner/ CEO, Municipal Corporation/ Municipal Council/ Nagar Panchayat or Vice-Chairman, Development Authority or District Collector, on the advice of the Heritage Conservation Committee.</i>
	Grade I	Category <i>Buildings and precincts of National or Historic importance</i>
		Scope for Changes <i>1. No interventions shall be permitted either on exterior or interior. 2. Absolutely essential and minimum changes shall be allowed, in the interest of strengthening and prolonging the life of the Buildings/or Precincts or any part or features thereof.</i>
		Procedure (Development Permission) <i>Development permission for changes shall be given by the Commissioner/ CEO, Municipal Corporation/ Municipal Council/ Nagar Panchayat/ Vice-Chairman, Development Authority/District Collector on the advice of the Heritage Conservation Committee. Reports stating that Buildings are structurally unsafe should be checked by a Structural Engineer, and duly cross checked by the Heritage Conservation Committee, before allowing reconstruction.</i>
	Grade II	Category <i>Buildings and Precincts of regional or local importance.</i>
		Scope for Changes <i>Grade-II(A): Internal changes and adaptive re-use may by and large be allowed but subject to strict scrutiny. Care would be taken to ensure the conservation of all special aspects for which it is included in Heritage Grade-II. Grade-II(B): In addition to the above, extension or additional building in the same plot or compound could in certain circumstances, be allowed provided that the extension / additional building is in harmony with (and does not detract from) the existing heritage building(s) or precincts especially in terms of height and façade.</i>
		Procedure (Development Permission) <i>Development permission for changes shall be given by the Commissioner/ CEO, Municipal Corporation/ Municipal Council/ Nagar Panchayat/ Vice-Chairman, Development Authority/ District Collector on the advice of the Heritage Conservation Committee. Reports stating that Buildings are structurally unsafe should be checked by a Structural Engineer, and duly cross checked by the Heritage Conservation Committee, before allowing reconstruction.</i>
	Grade III	Category <i>Buildings and precincts of importance for townscape.</i>
		Scope for Changes <i>Internal changes and adaptive re-use may by and large be allowed. Changes may include extensions and additional buildings on the same plot or compound.</i>
		Procedure (Development Permission) <i>Development permission for changes would be given by the Commissioner/ CEO, Municipal Corporation/ Municipal Council/ Nagar Panchayat/ Vice-Chairman, Development Authority/ District Collector on the advice of the Heritage Conservation Committee. Reports stating that Buildings are structurally unsafe should be</i>

Model Building Bye-Laws, TCPO, MoUD India 2016

S. No.	Provisions	Regulations
		checked by a Structural Engineer, and duly cross checked by the Heritage Conservation Committee, before allowing reconstruction.
	Heritage Precincts	Category: It may consist of a number of Buildings and spaces, such as Streets with Cultural or Heritage significance worth recognition and conservation. Scope for changes: 1. Sensitive additions, alterations, extensions and interior renovations shall be permissible, but these should not alter the character of the Building/Precinct. The new interventions may be contemporary but subtle, or inspired by the original character and not tasteless imitation. 2. Reconstruction is permissible but only for Buildings that are totally structurally unsafe, as certified by a Structural Engineer and corroborated by the Heritage Conservation Committee. The reconstruction should not follow the prevailing Bye-Laws but should be in such a manner which ensures that the Building/Precinct character is not diminished, and yet allows for growth and good urban design. 3. Urban Design Guidelines should be prepared separately for each of the Listed Heritage Precincts as extension of the ByeLaws. All constructions within Heritage Precincts should be governed by the said Guidelines. Procedure (Development Permission): Development permission for changes shall be given by the Commissioner/CEO, Municipal Corporation/Municipal Council/Nagar Panchayat/Vice-Chairman, Development Authority/District Collector on the advice of the Heritage Conservation Committee. Reports stating that buildings are structurally unsafe should be checked by a Structural Engineer, and duly cross checked by the Heritage Conservation Committee, before allowing reconstruction.
2	General Guidelines for Development/ Redevelopment/ Repairs etc. within Heritage Area/ Precinct/ Asset/ Building	Signage Design and Controls 8.6 Signages and Outdoor display structures including Furniture on Heritage sites: The Commissioner/CEO, Municipal Corporation/Municipal Council/Nagar Panchayat or Vice-Chairman, Development Authority or District Collector on the advice of the Heritage Conservation Committee shall frame Regulations to regulate signages, outdoor display structures and street furniture on Heritage sites. Till such regulations are framed, the following guidelines may be followed: A. National Building Code – The display or advertising signages and outdoor display structures on Buildings and land shall be in accordance with Part X – Signs and Outdoor Display Structures of the National Building Code of India, 2005. B. Additional Conditions – In addition to sub-regulation A above, the following provisions shall apply to advertising signages in different Land Use Zones- i. Residential Zone: Non-flashing neon signs with illumination not exceeding 40 watts. a) One name plate with an area not exceeding 0.1 sq m for each dwelling unit. b) For other uses permissible in the zone, one identification sign or bulletin board with an area not exceeding 10 sq m, provided the height does not exceed 1.5m. c) 'For sale' or 'For rent' signs for real estate, not exceeding 2 sq m in area, provided they are located on the premises offered for sale or rent. ii. Mix-Use Zone: Non-flashing business signs placed parallel to the wall and not exceeding 1m in height per establishment. iii. Commercial Zone: Flashing or non-flashing business signs parallel to the wall not exceeding 1m in height, provided such signs do not face residential buildings -- in which case only non-flashing signs shall be permitted.

Model Building Bye-Laws, TCPO, MoUD India 2016

S. No.	Provisions	Regulations
		C. Prohibition of advertising signs and outdoor display structures in certain cases: Notwithstanding the provisions of sub-regulations A and B, no advertising sign or outdoor display structures shall be permitted on buildings of architectural, aesthetic, historical or Heritage importance as may be decided by the Commissioner/CEO, Municipal Corporation/Municipal Council/Nagar Panchayat or Vice-Chairman, Development Authority or District Collector on the advice of the Heritage Conservation Committee, or on Government buildings -- except that in the case of Government buildings only advertising signs or outdoor display structures may be permitted if they relate to the activities of the said Buildings. D. Provided, that if the Heritage Conservation Committee so advises, the Commissioner/CEO, Municipal Corporation/Municipal Council/Nagar Panchayat or Vice-Chairman, Development Authority or District Collector, shall refuse permission for any signage or outdoor display structure. E. The Municipal Commissioner/CEO, Municipal Corporation/Municipal Council/Nagar Panchayat or Vice-Chairman, Development Authority or District Collector, may, on the advice of the Heritage Conservation Committee, add to, alter or amend the provisions of sub-regulations A, B and C above. F. Signages and Outdoor display structures (including street Furniture) shall require the approval of the Heritage Conservation Committee, which may prescribe additional requirements for the same.
	Skyline	8.5 Protection of visual landscape and surroundings: Buildings within Heritage Precincts, or in the vicinity of Heritage sites, shall strive to maintain the skyline in the Precinct and follow the architectural style (without any high-rise or multi-storeyed development) as may be existing in the surrounding area, so as not to diminish or destroy the aesthetic value, or view of, from the said Heritage sites. The development within the Precinct or in the vicinity of Heritage sites shall be in accordance with the Urban Design Guidelines framed by the Commissioner/CEO, Municipal Corporation/Municipal Council/Nagar Panchayat or Vice-Chairman, Development Authority or District Collector on the advice of the Heritage Conservation Committee -- or separate Regulations, if any, prescribed for the respective zones by the Municipal Corporation/ Municipal Council/ Panchayat/ Development Authority/ District Collector.
	Others	9.1 Road widening i. If road widening lines are proposed under the Master Plan, they shall be such that they protect and not detract from the said Heritage sites. ii. If there are any new road widening lines proposed in the revised draft or sanctioned Development Plans/Master Plans/Regional Plans, the Municipal Commissioner/CEO, Municipal Corporation/Municipal Council/Nagar Panchayat or Vice-Chairman, Development Authority or District Collector/Heritage Conservation Committee shall consider the Heritage provisions and environmental aspects, while considering applications for Development Permissions in these areas. Necessary steps may be taken to modify the Development Plan/Master Plan/Regional Plan accordingly.

Model Building Bye-Laws, TCPO, MoUD India 2016

S. No.	Provisions	Regulations
		<i>Pending this action, the road widening/development of new roads shall not be carried out.</i> iii. <i>No widening of the existing roads under the Development Plan/Master Plan/Regional Plans shall be carried out in a manner which may affect the existing Heritage Buildings (even if they are not included in a Heritage Precinct), or which may affect Listed Natural Features. Widening of the existing roads under the Master Plan or Zonal Development Plan or Layout Plan shall be carried out considering the existing Heritage Buildings (even if they are not included in a Heritage Precinct), or which may affect Listed Natural Feature Areas.</i> 9.2 Master Plan Reservations: <i>If there are any Development Plan/Master Plan/Regional Plan Reservations shown on Heritage sites, the same shall not be implemented. If required, Municipal Commissioner/CEO, Municipal Corporation/Municipal Council/Nagar Panchayat or Vice-Chairman, Development Authority or District Collector, on the advice of the Heritage Conservation Committee, shall approach the State Government to get these Reservations modified/deleted.</i>
3	New construction/ Development/ Re-Development/ Addition/ Alterations or Extensions to Existing Structure	8. Development Control 8.2 Restrictions on Development/Re-Development/Repairs etc.: i. <i>No development or redevelopment or engineering operation or additions/alterations, repairs, renovations including painting of the building, Replacement of special features or plastering or demolition of any part thereof of the said Listed Buildings or Listed Precincts or Listed Natural Feature Areas shall be allowed except with the prior permission of the Commissioner/CEO, Municipal Corporation/Municipal Council/Nagar Panchayat or Vice- Chairman, Development Authority or District Collector. Before granting such permission, the agency concerned shall consult the Heritage Conservation Committee, and shall act in accordance with the advice of the Heritage Conservation Committee.</i> ii. <i>Provided that, before granting any permission for demolition or major alterations/additions to listed buildings (or buildings within listed streets or precincts), or construction at any listed natural feature areas, or alteration of boundaries of any listed natural feature areas, objections and suggestions from the public shall be invited and considered by the "Heritage Conservation Committee".</i> iii. <i>Provided that, only in exceptional cases, with reasons to be recorded in writing, the Commissioner/CEO, Municipal Corporation/Municipal Council/Nagar Panchayat or Vice- Chairman, Development Authority or District Collector may refer the matter back to the Heritage Conservation Committee for reconsideration.</i> <i>The decision of the Heritage Conservation Committee, after such reconsideration, shall be final and binding.</i>
4	Others	8.3 Alteration/Modification/Relaxation in Development Norms: <i>On the advice of the Heritage Conservation Committee and with reasons to be recorded in writing, the Commissioner/CEO, Municipal Corporation/Municipal Council/Nagar Panchayat or Vice- Chairman, Development Authority or District Collector shall follow the procedure as per Development Authority Act/Town and Country Planning Act/Building Byelaws/Development Control Regulations to alter, modify or relax the Development Control Norms prescribed, if required, for the Conservation or Preservation or Retention of historic or aesthetic or cultural or architectural or environmental quality or beauty or vista of any Heritage Building/Precinct.</i>

Model Building Bye-Laws, TCPO, MoUD India 2016

S. No.	Provisions	Regulations
		8.4 Development Permission for Heritage Precincts/Natural Feature areas: In case of Notified streets, Precincts, Areas and Natural Feature Areas, development permissions shall be granted in accordance with Urban Design Guidelines prescribed for respective Streets, Precincts/Natural Feature Areas, which shall be framed by the Commissioner/CEO, Municipal Corporation/Municipal Council/Nagar Panchayat or Vice-Chairman, Development Authority or District Collector on the advice of the Heritage Conservation Committee. 8.7 Restrictive Covenants: Restrictions existing as imposed under covenants, terms and conditions on leasehold plots, either by the State Government or by Municipal Corporation, Municipal Council/Nagar Panchayat or Development Authority/District Collector, shall continue to be imposed in addition to Development Control Regulations. However, in case of any conflict with the Heritage preservation, the Heritage Regulations shall prevail.
5	Penalties	8.8 Violation of the Regulations shall be punishable under the provisions regarding unauthorized development. In case of proven deliberate neglect of and/or damage to Heritage Buildings and Heritage Precincts, or if the Building is allowed to be damaged or destroyed due to neglect or any other reason, in addition to penal action provided under the Act concerned, no permission to construct any new Building shall be granted on the site if a Heritage Building or Building in a Heritage Precinct is damaged or pulled down without prior permission of the Municipal Commissioner/CEO, Municipal Corporation/Municipal Council/Nagar Panchayat or Vice-Chairman, Development Authority or District Collector. It shall be open to the Heritage Conservation Committee to consider a request for rebuilding/reconstruction of a Heritage Building that was unauthorizedly demolished or damaged, provided that the total built-up area in all floors put together in such new construction shall not be in excess of the total built-up area in all floors put together in the original Heritage Building in the same form and style, in addition to other conditions/controls that may be specified.
6	Incentives	10 Incentive uses for Heritage Buildings : In case of Buildings located in Non-Commercial Use zones included in the Heritage Conservation List, if the owner/owners agree to maintain the Listed Heritage Building as it is in the existing state and to preserve its Heritage state with due repairs, and the owner/owners/lessees give a written undertaking to that effect, the owner/owners/lessees may be allowed - with the approval of the Heritage Conservation Committee - within permissible use zones to convert part or whole thereof of the Non-Commercial Area within such a Heritage Building to Commercial/Office/Hotel use. Provided that, if the Heritage Building is not maintained suitably or if the Heritage Value of the Building is altered in any manner, the Commercial/Office/Hotel use shall be disallowed. 10.1 Grant of TDR in cases of loss of development rights: If any application for development is refused under these Regulations, or conditions are imposed while permitting such development which deprive the owner of any unconsumed FAR, the said owner(s)/lessee(s) shall be compensated by grant of Development Rights Certificate of the nature set out in Appendix I, and as prescribed by Government from time to time. The extent of Development Rights Certificate to be granted may be determined by the Municipal Commissioner/CEO, Municipal Corporation/Municipal Council/Nagar Panchayat or Vice-Chairman, Development Authority or District Collector, on the advice of the Heritage Conservation Committee. 10.2 Heritage Fund: With a view to give monetary help for repairs of Heritage Buildings, a separate Fund may be created, which would be kept at the disposal of the Municipal Commissioner/CEO, Municipal Corporation, Municipal Council/Nagar Panchayat or Vice-Chairman, Development Authority or District Collector, and shall make disbursements from the Fund on the advice of the

Model Building Bye-Laws, TCPO, MoUD India 2016		
S. No.	Provisions	Regulations
		<i>Heritage Conservation Committee. The fund shall be used mainly to support the cost of Listing of Heritage Buildings/Sites, and for expert guidance and fees of architects, engineers and other experts -- while the actual Conservation work shall be supported by the owners or from sources other than the Heritage Fund.</i>
7	Owner's Responsibility	8 Development Control 8.1 Responsibility of the owners of Heritage Buildings: It shall be the responsibility of the owners of Heritage Buildings and Buildings in Heritage Precincts to carry out regular repairs. The State Government/Municipal Corporations/Municipal Councils/Nagar Panchayats/Rural Local Bodies and Authorities shall not be responsible for such repair and maintenance, except for the buildings owned by them.

Appendix III: Comparative study of Heritage Protection Norms of Selected Cities

Section 01 Findings from Jaipur City

Sections in Italics are verbatim from The **Jaipur (Walled City) Heritage Conservation and Protection Regulations 2020**.

Jaipur City			
S. No.	Provisions		Regulations
1	Institutional Framework		1. State Heritage Committee. 2. Technical Heritage. 3. Heritage Committee Cell.
2	Grading/Listing		Grade I, II and III
	Grade I	Category	National Importance/ASI protected and other similar Heritage Assets.
		Scope for Changes	1. No interventions be permitted either on exterior or interior. 2. Absolutely essential and minimum changes, in the interest of strengthening and prolonging the life of the Buildings/Precincts.
		Procedure (Development Permission)	State Government on the advice of the Technical Heritage Committee.
	Grade II	Category	State importance/State owned and Other similar Heritage Assets
		Scope for Changes	<i>Grade-II(A): Internal changes and adaptive re-use may by and large be allowed but subject to strict scrutiny. Care would be taken to ensure the conservation of all special aspects for which it is included in Heritage Grade-II.</i> <i>Grade-II(B): In addition to the above, extension or additional building in the same plot or compound could in certain circumstances, be allowed provided that the extension / additional building is in harmony with (and does not detract from) the existing heritage building(s) or precincts especially in terms of height and façade.</i>
		Procedure (Development Permission)	State Government on the advice of the Technical Heritage Committee.
	Grade III	Category	Local importance, Private properties and Other similar Heritage Assets.
		Scope for Changes	1. <i>Internal changes and adaptive reuse, and any Commercial use with the approval of competent authority; without change in exterior façade as per Façade Control Guidelines;</i> 2. <i>Changes can include extensions and additional buildings on the same plot or compound.</i>
		Procedure (Development Permission)	Technical Heritage Committee on the advice of Heritage Cell.
3	Building Parameters and Control Guidelines	Setback (in metre)	As per prevailing Building line.
		Ground coverage	Within Plot/Property area.

Jaipur City			
S. No.	Provisions		Regulations
		Max. Permissible Height (in metre)	Roads/Main Bazars: 15m (G+3), Internal Roads: 12m (G+2)
		Parking	As per Parking Policy for Walled City.
		Built-Up Area Ratio	<i>As achieved within permissible ground coverage and permissible maximum Height/No. of floors.</i>
		Basement	<i>No Basement shall be allowed except in special cases, for public purposes like parking/public utilities, MRTS, etc. with specific permission of the State Government.</i>
4	General Guidelines for Development/ Redevelopment/ Repairs etc. within Heritage Area/ Precinct/ Asset/ Building	Urban structure	<i>New development should seek to understand, acknowledge and make a positive contribution to the existing urban structure. A new intervention, which responds well to urban structure, would sit well within a group, rather than associate itself with a particular building.</i>
		Urban grain	<i>New developments should respect urban grain – the pattern of streets and spaces – rather than of buildings. Urban grain tends to be influenced by the rhythm of architectural composition and the prevailing relationship of solid-to-void in buildings.</i>
		Scale	<i>New design should consider the surrounding scale, hierarchy and massing of the existing built form. Buildings within Heritage Precincts/Conservation Area or in the vicinity of Heritage sites shall maintain the skyline in the precinct, and follow the architectural style (without any high-rise or multi-storeyed development) as may be existing in the surrounding area, so as not to diminish or destroy the value and beauty of, or the view from, the said Heritage sites. New developments outside the conservation area should not be more than two floors on 40ft wide road, and not more than three floors on roads more than 40ft wide.</i>
		Parking	<i>Parking provisions in relation to the Heritage properties located on the narrow roads and converted to commercial use would be done through Park-and-Ride facility provided by the property owner.</i>
		Materials and detailing	<i>The sensitive use of appropriate color, texture and pattern of materials, whether traditional or contemporary, is also important. Their use and detailing, particularly near to open landscapes, is crucial in making a development stand out or blend in.</i>
		Landscape	<i>New development should aspire to blend and coalesce with the existing built form without simply replicating it.</i>
		Views and Landmarks	<i>New design should consider ways to enhance or protect their function as landmarks. In some instances, new designs might provide the opportunity to create new vistas towards landmarks, restore older views that have been lost or compromised, or create dynamic juxtapositions of old and new, so adding texture and variety to the townscape.</i>
		Historical development	<i>New design should consider and respond to these layers of history – the ‘narrative’ of the place. Analysis of historical maps along with archive material and published sources are very useful analytical tools to understand the historical development of a place.</i>

Jaipur City		
S. No.	Provisions	Regulations
5	Architectural Control Guidelines	The owners of buildings situated on main roads/main bazars shall strictly follow the Architectural Control Guidelines for façade and all other Architectural elements like Arches, Jali, Jharokha, Railing, Colour Scheme etc. of buildings. No deviation/change of façade as per Architectural Control Guidelines shall be permitted. In case any owner of building has changed the façade or erected temporary structure like hoardings, sign boards, sheds, outdoor advertising structure, poles etc., deviating the guidelines, shall have to reconstruct/restore on his own expenses, as per the approved guidelines, within 60 days of issuance of notice by Jaipur Municipal Council, in this regard, even if the front elevation of any building is approved by the Competent Authority.
6	New construction/ Development/ Re-Development/ Addition/ Alterations or Extensions to Existing Structure	No development or redevelopment or engineering operation or additions/alterations, repairs, renovations including painting of the building, replacement of special features or plastering or demolition of any part thereof of the said listed buildings or listed precincts or listed natural feature areas situated within walled city area shall be allowed except with the prior permission of Competent Authority. Before granting such permission, the Competent Authority concerned shall mandatorily consult the Heritage Cell/Technical Heritage Committee and shall act accordingly.
7	Prohibited	Scope of change/Adaptive reuse implications - Works relating to changes, development or redevelopment or additions, alterations and renovation of heritage sites shall be permitted in accordance with following: - 1. Demolition (part or whole) and reconstruction except in the specific case of building getting damaged due to any natural calamity, disaster, fire, riots etc. and dilapidated condition of structure being unsafe for public or occupants of the building. 2. Change in the exterior façade or deviation of Architectural/Façade Control Guidelines. 3. Alteration or addition including structural changes (in Grade-I heritage sites/buildings). 4. Removal or alteration of carvings, paintings, and other decorative architectural elements.
8	Repairing	Application for construction or reconstruction or repair or renovation in Conservation area - Any person, who owns or possesses any building or structure or land in any conservation area, and desires to carry out any construction or reconstruction or repair or renovation of such building or structure on such land, as the case may be, may make an application to the competent authority for carrying out construction or reconstruction or repair or renovation, as the case may be.

Jaipur City		
S. No.	Provisions	Regulations
9	Maintenance of Heritage Building	1. The State Government may by an order place any listed/protected heritage asset owned by State Government or any local authority or any such public authority at the disposal of the Jaipur Municipal Corporation for the purpose of maintenance. 2. The Jaipur Municipal Corporation may, for the purpose of conservation of a listed/protected heritage asset vested in it or in which it has acquired right for the purpose of maintenance, enter into an agreement with any person, firm or trust on such terms and conditions, not inconsistent with the provisions of these regulations, as may be specified in the agreement. 3. Notwithstanding anything contained in these regulations, the person, firm or trust referred to in 18(1) shall be entitled to collect and retain the whole or such portion of the fee leviable under these regulations and for such period, as may be agreed upon between the Jaipur Municipal Corporation and such person, firm or trust, as the case may be having regard to the expenditure involved in the maintenance of the heritage asset and collection of fee, interest on the capital invested, reasonable return of the investment and the volume of visitors.
10	Inventory and Mapping	The process of GIS based inventorying, mapping and valuation of all properties and heritage assets within the walled city area will be carried out by the Heritage Cell along with the agency designated by Municipal Corporation, Jaipur in coordination with City Stakeholder Group. The Heritage Cell will gather prior heritage asset inventories, which include monuments, routes, landscapes, neighborhoods, buildings, practices, and traditions. Developing a preliminary list and map including their historical growth, the Heritage Cell in coordination with the City Stakeholder Group will then carry out a series of local workshops open to the community.
11	Others	Heritage Databank: The Heritage Cell shall compile a comprehensive databank of all heritage assets along with data connected therewith. It may also include any data pertaining to such heritage sites which have potentials to be included as protected heritage in the future. The heritage databank will be maintained and periodically updated as and when required, by the Cell which will also be responsible for adding and/or removing protected heritage assets from this record.

Jaipur City		
S. No.	Provisions	Regulations
12	Penalties	- Whoever; - - destroys, injures, mutilates, defaces, alters, removes, disperses, misuses, imperils or allows to fall into decay a protected heritage asset, - being the owner or occupier of protected heritage asset, contravenes an order made under these rules, - carries out any construction, re-construction or repair and renovation in the Conservation Area without the previous permission of the competent authority or in contravention of the permission granted by the competent authority, shall be punishable under the Section 194 of the Rajasthan Municipalities Act, 2009 - Whoever contravenes any other provisions of these rules or the provisions of the Regulations, made there under shall be penalized as per the provisions of Municipal Act, 2009 or the rules and regulations framed therein.
13	Incentives	<u>Flexible land use/building use for Heritage Buildings:</u> In cases of buildings located in non-commercial use zones included in the Heritage Conservation List, if the owner/owners agree to maintain the listed Heritage Building as it is in the existing state and to preserve its heritage state with allowed internal changes and due repairs and the owner/owners/lessees give a written undertaking to that effect, the owner/owners/lessees may be allowed with the approval of the competent authority to convert part or whole thereof of the non-commercial area within such a Heritage Building to commercial use/uses. <u>Transferable development rights:</u> Facility of Transferable Development Rights shall also be allowed as per TDR policy of the State Government. <u>Tax rebates (UD tax and other taxes as applicable):</u> In cases of listed buildings, if the owner/owners agree to maintain the listed Heritage Building as it is in the existing state and to preserve its heritage state with allowed internal changes and due repairs/carry out sensitive adaptive reuse the owner/owners/lessees give a written undertaking to that effect, they will be given tax rebate in Urban Development Tax for residential properties/commercial properties, as approved by the State Government. The State will consider all projects proposed in selected heritage properties, that wish to provide tourism related infrastructure, to be equal to tourism projects and avail the same special incentives in taxes (as mentioned in the Tourism Policy). This includes tax-holidays in Electricity Duty, Luxury tax, Entertainment tax and Sales tax, with exemptions in Stamp Duty and Land charge for rent/sale. <u>Heritage Fund:</u> The State Government may, pay to the by way of grants such sum of money as the State Government may think fit for being utilized for the purposes of these Regulations.
14	Owner's Responsibility	It shall be the duty of the owners of Heritage Buildings and building in heritage precincts or in heritage streets situated within walled city to carry out regular repairs and maintenance of the buildings on their own expenses. The State Government, the Municipal Corporation or any Authorities shall not be responsible for such repair and

Jaipur City		
S. No.	Provisions	Regulations
		<i>maintenance except for the buildings owned by them or except in case the repair and maintenance of any street is carried out under any special project which may include façade of privately owned buildings also.</i>
15	Mechanism for sanction	<i>The Heritage Cell shall prepare Guidelines if required, in addition to these regulations, in respect of the heritage assets in Walled city, which shall be placed before the Technical Heritage Committee for its approval.</i>

Section 02 Findings from Ahmedabad City

Sections in Italics are verbatim from **Gujarat Comprehensive Development Control Regulations - 2017**, Urban Development and Urban Housing Department, Government of Gujarat.

Table 14: Findings from Heritage Protection Norms – Ahmedabad City

Ahmedabad City			
S. No.	Provisions		Regulations
1	Institutional Framework		Heritage Conservation Committee.
2	Building Parameters and Control Guidelines	Setback (in m)	3m (from central line of existing street, where regular line of street is not prescribed).
		FSI	2
		Ground coverage	1. Building-units with area 500 sq. m. or less: In case of open or partially built plot, the ground coverage shall be the entire area of the building-unit after keeping required margin, common plot, setback, parking as per these regulations; 2. Building unit with area 500-1500 sq. m.: 75%. 3. Building unit with area more than 1500 sq. m.: 65%
		Max. Permissible Height (in m)	1. Maximum permissible building height shall be regulated according to the width of the road on which it abuts, Up to 7.5m: Twice the width of the abutting road or open space. 2. 7.5m-12m: 15m; 3. 12m and above: 25m
		Parking	<i>Not required if the proposed uses are hospitality and/or sympathetic adaptive re-use to residential.</i>

Ahmedabad City		
S. No.	Provisions	Regulations
	Basement	1. No basement shall be permitted within required set back. 2. All-round margin of 1.00m shall have to be kept from adjoining property for construction of basement. 3. Road-side margin of 4.5m shall be provided. 4. For margins except Road-side margin, space of 3.0m shall have to be kept from adjoining building-unit boundary for construction of basement. 5. Basement shall be allowed for parking if the area of building-unit is more than 300 sq. m. 6. For building-units with area more than 1500 sq. m., basement shall be allowed for parking at two levels
3	Open Space Regulations	The location and dimensions of the open space shall be based on the dimensions of the building-unit and the proposed building height, whichever is higher shall be applicable.
4	Permissible Uses	For Heritage areas - Dwellings, Mercantile, Hospitality; Other areas of core walled city - Dwelling, Mercantile, Hospitality, Religious, Public - Institutional, Educational (Depending on the road width).
5	New construction/ Development/ Re-Development/ Addition/ Alterations or Extensions to Existing Structure	For Heritage Areas - Additions and/or alterations shall have to be carried out based on the guidelines provided in the Heritage Conservation Plan without compromising the original character of the buildings.
6	Others	Heritage Conservation Plan Structures, Buildings and Precincts in the Core Walled City shall be notified under 'Heritage Areas' by the Competent Authority as identified in the Heritage Conservation Plan prepared by the Competent Authority with the help of Heritage Committee. The list of the Heritage Areas shall be made available to the applicant on request. The remaining areas shall be referred to as 'Other Areas of Core Walled City' in this Regulation.
7	Penalties	1. Conforming with General Development Control Regulations (GDCR) without applying for Development Permission • Financial penalty for undertaking building which is in conformity with Development Control Regulations prescribed in relevant GDCRs. of the competent development authority, but which has been undertaken without applying for a Development Permission, shall be fifteen (15) times the scrutiny fees that is leviable on the building-unit, as the case may be. 2. Conforming with GDCR after applying, but before Obtaining Development Permission, and not as per Submitted Plan. • Financial penalty for undertaking building which is in conformity with Development Regulations prescribed in the relevant GDCR of the competent development authority, but which has been undertaken without revising Development Permission, shall be ten (10) times the Revised Development Permission Fees that is leviable on the building-unit, as the case may be. 3. Conforming with GDCR after applying, but before Obtaining Development Permission:

Ahmedabad City		
S. No.	Provisions	Regulations
		- Financial penalty for undertaking building which is in conformity with Development Regulations prescribed in the relevant GDCR of the competent development authority, and the application made for Development Permission, but which has been undertaken without obtaining a Development Permission shall be five (5) times the Development Permission Fees that is leviable on the building-unit, as the case may be. 4. Open Uses of Land including Layout and Sub-division without Obtaining Development Permission: - Financial penalty for undertaking open uses of land including layout and sub-division which is in conformity with Development Regulations prescribed in the relevant GDCR of the competent development authority, but which has been undertaken without obtaining a Development Permission shall be twice (2) times the Development Permission Fees that is leviable on the building-unit, as the case may be. 5. Penalties for Making Unauthorized Use of a Building (Refer Regulation No. 2.12.1) - Financial Penalty for making unauthorized use of a building shall be four (4) times the Development Permission Scrutiny Fees that is leviable for the Built-Up area of the building.
8	Incentives	Tradable Development Right (TDR) - Tradable Floor Space shall be provided for a building-unit with Heritage Structures or Building, or for building-units within a Heritage Precinct notified by the Competent Authority in the Heritage Conservation Plan. - Such Heritage Buildings shall be classified on the basis of their respective Heritage Value as per Heritage Conservation Plan. - Highest Heritage Value - 50% of total utilized FSI - High and Moderate Heritage Value - 30% of total utilized FSI - Non-Listed - Nil - The Competent Authority shall issue Tradable Right Certificate (TRC) identifying the amount of Tradable Floor Space for the building. - Maximum 10% of this Floor Space may be used for extensions or alterations to the existing notified Heritage Building, within the limit of maximum permissible FSI. - A transparent mechanism based on e-governance shall be prepared by the Competent Authority for monitoring the trading of TRC.
9	Mechanism for sanction	(Refer Regulation No. 4.1.3 and 4.2.3) The Owner/Developer shall submit to the Competent Authority the following documents, drawings, and specifications -- along with application for obtaining and revising a Development Permission.

Section 03 Findings from Mumbai

Sections in Italics are verbatim from the **Development Control Regulations for Greater Bombay, 1991**, schedule list annexed to Maharashtra Government Notification No. DCR 1090/3197/RDP/ UD- II dated 21st April 1995; and **Development Control and Promotion Regulation, 2034**, Municipal Corporation of Greater Mumbai.

Table 15: Findings from Heritage Protection Norms – Mumbai

Mumbai		
S. No.	Provisions	Regulations
1	Institutional Framework	Heritage Conservation Committee.
2	Grading/Listing	<i>Grading of the Listed Buildings/Listed Precincts - In the last column of the said list of Heritage Buildings/Heritage precincts, 'Grades' such as I, II or III have been indicated. The meaning of these Grades and Basic Guidelines for Development Permissions are: Listing does not prevent change of ownership or usage. However, such usage should be in harmony with the said listed Precinct/Building. Care will be taken to ensure that the Development Permission relating to these buildings is given without delay.</i>
3	General Guidelines for development/ redevelopment/ repairs etc. within Heritage Area/ Precinct/ Asset/ Building	Signage design and controls <i>Prohibition of advertising signages and outdoor display structures in certain cases: Notwithstanding the provisions of sub-regulations (1) and (2), no advertising sign or outdoor display structures shall be permitted on Buildings of Architectural, Aesthetical, Historical or Heritage importance as may be decided by the Commissioner, or on Government buildings -- except in the case of Government buildings where only advertising signages or outdoor display structures may be permitted if they relate to the activities for the said buildings' own purposes or related programs. (Development Control Regulations for Greater Mumbai, 1991).</i>
		Skyline <i>Buildings included in Listed Heritage Precincts shall maintain the skyline in the Precinct (without any high-rise development) as may be existing in the surrounding area, so as not to diminish or destroy the value and beauty of the said listed Heritage Buildings/Heritage Precincts. The Development within the Precinct shall be in accordance with the guidelines framed by Commissioner in consultation with Heritage Conservation Committee.</i>
4	New construction/ Development/ Re-Development/ Addition/ Alterations or Extensions to Existing Structure	Heritage Regulation for Greater Bombay 1995: <i>No development or redevelopment or engineering operation; or additions, alterations, repairs, renovation including the painting of buildings, replacement of special features or demolition of the whole or any part thereof; or plastering of said Listed/Heritage Buildings or Listed/Heritage Precincts shall be allowed except with the prior written permission of the Commissioner. The Commissioner shall act on the advice of/in consultation with the Heritage Conservation Committee to be appointed by the Government (hereinafter called the said Heritage Conservation Committee).</i> Development Plan 2034: <i>No development or redevelopment or engineering operations; or additions, alterations, repairs, renovation including the painting of buildings, replacement of special</i>

Mumbai		
S. No.	Provisions	Regulations
		features or demolition of the whole or any part thereof; or plastering of said Listed/Heritage Buildings or Listed/Heritage Precincts shall be allowed except with the prior written permission of the Commissioner. The Commissioner shall act on the advice of/in consultation with the Mumbai Heritage Conservation Committee to be appointed by the Government (hereinafter called MHCC). Provided that in exceptional cases, for reasons to be recorded in writing, the Commissioner may overrule the recommendation of the MHCC. The decision of the Municipal Commissioner shall not be subject to challenge by the MHCC.
5	Others	1. Requirements of Sites: No land shall be used as a site for the construction of buildings — (n) if the proposed development is likely to involve damage to or have deleterious impact on or is against urban aesthetics or environment or ecology and/or on Historical/ Architectural/ Aesthetical Buildings and Precincts or is not in the public interest. 2. Development Plan Reservation: If there are any DP Reservations on listed Heritage structure and due to development of such site if adversely affects its character, then Municipal Commissioner on recommendation of MHCC shall initiate the process of modification/deletion of such reservation following due procedure. 2. Relaxation in Building and other requirements: Heritage Buildings of Grade-I and II as well as authorized and structurally sound retainable buildings may be included in the URC, but shall have to be kept as they are, along with land appurtenant, and this area shall be counted towards the slab of Incentive FSI but shall not be considered for FSI under this Regulation. As regards such Heritage Structures, the Promoter/Developer shall have to contribute Heritage Cess at 5% of ASR on the basis of BUA of the Heritage structure. Existing provisions under the DCR shall apply to Heritage Buildings of Grade-III and buildings in heritage precincts. However, if the URS contains Grade I structure, the HPC shall consult the MHCC before granting approval.
6	Incentives	1. <u>Heritage Regulations for Greater Bombay, 1995</u> a. Grant of Transferable Development Rights in cases of loss of Development Rights - If any application for development is refused under this Regulation or conditions are imposed while permitting such development which deprive the owner/lessee of any unconsumed FSI the said owner/lessee shall be compensated by grant of Development Rights Certificate (hereinafter referred to as "TDR") of the nature set out in Development Control Regulation No. 34 and Appendix VIJA and as may be prescribed by Government from time to time. The TDR from Heritage Buildings in the island city may also be consumed in the same ward from which it originated. The extent of TDR Certificates to be granted may be determined by the Commissioner, if required in

Mumbai		
S. No.	Provisions	Regulations
		consultation with the Heritage Conservation Committee and will not be awarded unless sanctioned by Government. b. <i>Repair Fund - Non-cessed buildings included in the said list shall be repaired by the owners/lessees of the said buildings themselves or if they are cessed buildings those can be repaired by MHADA or by the owner or by the Co-operative Society or the owners and for occupiers of the old building. With a view to give monetary help for such repairs a separate fund may be created, which would be kept at the disposal of Municipal Commissioner, Bombay Municipal Corporation, who will make disbursement from the funds in consultation with Heritage Conservation Committee. Provision for such a fund may be made through District Planning and Development Council Budget.</i> 2. <u>Draft Development Plan 2034</u> a. <i>Grant of Transferable Development Rights in case of loss of Development Rights: If any application for development of Heritage Building(s) is refused under this Regulation and conditions are imposed while permitting such development which deprive the owner/lessee of any unconsumed Development Rights, the said owner/lessee shall be compensated by grant of Development Right Certificate in terms of TDR as provided in these Regulations. The extent of TDR permissible will be the difference between Zonal (basic) FSI plus area of plot and the consumed BUA of the Heritage structure. The grant of TDR shall be subject to a contract between the owner/lessee and MCGM binding the owner/lessee to conserve the Heritage Building in the prescribed manner as recommended by MHCC and approved by Municipal Commissioner. In such cases the potential of the plot shall be perpetually reduced to the extent of existing BUA of the Structure.</i> b. <i>Additional regulations for the grant of TDR to owners/lessees of Heritage Buildings/heritage precincts and conditions for grant of such rights:</i> i. <i>As provided in Regulation No. 52 DRs of the owner/lessee of any Heritage Building who suffers loss of DRs due to any restrictions imposed by the Commissioner or Government under Regulations No 52 shall be eligible for award of TDR in the form of FSI to the extent and on the conditions set out below at 2. Such award will entitle the owner of the Heritage Building to FSI in the form of a DRC which he may use himself or transfer to any other person.</i> ii. <i>For generating TDR, agreement with MCGM shall be executed stating that the heritage structure will be maintained by the Owner as decided by the Commissioner along with a clause of penalty for breach of conditions of agreement as may be decided by Commissioner and potential of the plot shall be perpetually reduced to the extent of existing BUA of the structure.</i>

Mumbai		
S. No.	Provisions	Regulations
7	Mechanism for Sanction	Development Permission and Commencement Certificate: <i>(2) Items of operational construction by some authorities excluded: —Construction for operational purposes, including maintenance of operational structures, by the following organizations, authorities or departments, whether temporary or permanent, may be exempted by the special permission of the Commissioner in each case from the purview of these Regulations, except those relating to floor space index and fire precautions:</i> <i>(i) Railways; (ii) National Highways; (iii) National Waterways; (iv) Major Ports; (v) Aerodromes and Airports.</i>

Section 04 Findings from Kolkata

Sections in Italics are verbatim from the **West Bengal Act LIX of 1980, Kolkata Municipal Corporation Act, 1980.**

Table 16: Findings from Heritage Protection Norms – Kolkata

Kolkata			
S. No.	Provisions		Regulations
1	Institutional Framework		Heritage Conservation Committee
2	Grading/Listing		<i>The Corporation with the recommendation of the Heritage Conservation Committee has prepared a Graded List of Heritage Buildings for Grade-I, Grade-IIA and Grade-IIB.</i> <i>The gradation of a Heritage Building according to its historical, architectural, environmental, or ecological purpose shall be such as may be prescribed.</i>
	Grade I	Scope for Changes	<i>No external change will be permissible. Use of the building should also be compatible with the category of the Heritage Building</i>
	Grade II	Scope for Changes	1. Grade-II(A): <i>Same as Grade-I for the Heritage Building. But new construction may be allowed in the open land within the premises in compatible manner with the Heritage Building.</i> 2. Grade-II(B): <i>Horizontal and vertical addition and alteration of the building may be allowed incompatible with the Heritage Building.</i>
	Grade III	Scope for Changes	<i>A plaque depicting the history of the building should be provided. Where the structure is having no architectural importance, demolition of the structure may be allowed.</i>

Kolkata			
S. No.	Provisions		Regulations
3	General Guidelines for development/ redevelopment / repairs etc. within Heritage area/ precinct/ asset/building.	Materials and detailing	<i>Repairing/addition/alteration works shall be done through traditional building materials and construction technique. Any kind of use of new material shall be done with the approval of the Heritage Conservation Committee on recommendation of the enlisted Conservation architect.</i>
		Signage design and controls	<i>On approval from the Heritage Conservation Committee hoardings, signage etc. may be allowed if they do not obstruct the view of the Heritage Building or is in harmony with the Heritage Building.</i>
4	New construction/ Development/ Re-Development/ Addition/ Alterations or Extensions to Existing Structure		1. Grade Table. 2. If surplus buildable land is available. 3. The construction shall have to be compatible with the existing Heritage Building. 4. The drawings and designs for such construction shall be prepared and recommended by the enlisted Conservation Architect. 5. Addition/alteration proposal shall be in accordance with the prevailing KMC Building Rules.
5	Demolition of Heritage Building		<i>Normally no Heritage Building shall be permitted for demolition. However, on prior approval of the Heritage Conservation Committee on the recommendation of the enlisted Conservation Architect, the non-significant portion of a Heritage Building may be allowed to be demolished.</i>
6	Repairing		<i>To repair any Heritage Building, a prior permission of the Heritage Conservation Committee is required for:</i> 1. Restoration of façade, structure, and interior. 2. Restoration of architectural elements/features. 3. Reconstruction of the portion which has been collapsed. 4. Reconstruction of the irreparable portion of the building to match with the existing characteristics.
7	Selling or leasing out of the Heritage Property		Selling or leasing out of the Heritage Property: <i>No permission is required for the buildings which are already declared as Heritage Building. However, the owner should mention the Heritage status of the building in registered document during such transfer of property. The owner should apply, along with the intending buyer, jointly to KMC -- prior to transfer of any property for the buildings which are under considerations -- for declaring as Heritage Building for permission.</i> Power of Corporation to require, purchase or take on lease Heritage Building: <i>Subject to the other provisions of this Act, the Corporation may acquire, purchase, or take on lease any Heritage Building for the purpose of preservation and conservation thereof:</i> <i>Provided that in the case of a Heritage Building declared as such for the purpose of preservation and conservation as required under sub-clause (ii) of clause (a) of sub-section (4) of section 31 of the West Bengal Town and Country (Planning and Development) Act, 1979 (West Ben. Act XIII of 1979), the approval of the concerned department of the State Government shall be taken.</i>

Kolkata		
S. No.	Provisions	Regulations
8	Change of Use of Heritage Building	<i>Heritage Conservation Committee may consider change of use. The proposed change of use shall be in terms of the Act and Rules and Regulations of the Kolkata Municipal Corporation.</i>
9	Maintenance of Heritage Building	<i>One can avail oneself of the national or international funds for the maintenance of such Heritage Buildings if properly approached through Conservation Architect. Compatible re-use of the building may be permitted for commercial benefits. In some special cases property tax may be reduced/exempted under Section 425 K of KMC Act, 1980.</i> Agreement with owner of Heritage Building pending acquisition: <i>The Municipal Commissioner may, pending acquisition of a Heritage Building by the Corporation under this Act and with the approval of the Mayor-in-Council, propose to the owner of such Heritage Building to enter into an agreement with the Corporation for a specified period for the maintenance of such Heritage Building.</i> Voluntary contribution and agreement with any voluntary organization, person or company: <i>The Municipal Commissioner may receive voluntary contributions towards the cost of maintaining any Heritage Building, and may give order as to the management and application of such contributions for the purpose of preservation and conservation of such Heritage Building.</i>
10	Inventory and Mapping	<i>Buildings with Architectural significance and Historical values are considered for their preservation and conservation. These buildings play an important role in the history of the city of Kolkata in particular and shall be maintained properly. For this purpose, it has been realized that an inventory of such buildings, upon which the Heritage status has been conferred, is to be undertaken.</i>
11	Taking over management and control of Heritage Building	<i>1. If the Municipal Commissioner, on receipt of any information, is satisfied that the owner of a Heritage Building fails to preserve or conserve the Heritage Building, the Municipal Commissioner may, when the Heritage Building is vacant and after hearing the owner, by order in writing, take over the management and control of such Heritage Building for the purpose of preservation and conservation thereof, suspending the right of the owner to transfer such Heritage Building for a maximum period of five years, subject to acquisition either by agreement or under the provisions of the Land Acquisition Act, 1894 (1 of 1894).</i> <i>2. The Municipal Commissioner shall thereafter notify the Heritage Building for letting it out by agreement to any person as tenant for the purpose as aforesaid, and the owner shall be entitled to an amount equal to the reasonable letting value of the Heritage Building as rent less the cost on account of preservation and conservation of the Heritage Building.</i>
12	Penalties	<i>1. Any person who destroys, removes, alters, defaces or misuses any Heritage Building or does any act, or abets in the commission thereof, shall be punishable with rigorous imprisonment for a term which may extend to three years and also with fine which may extend to fifty</i>

Kolkata		
S. No.	Provisions	Regulations
		thousand rupees and, in default, with further rigorous imprisonment for six months. 2. Any court convicting any person under this section shall, by order, direct such person to restore the Heritage Building to its former shape and beauty at his cost, and any failure to comply with such order shall be deemed to be a continuing offence and such person shall be punishable with an additional fine of rupees two hundred and fifty for every day during which such contravention or failure continues after conviction for the first such contravention. 3. Where an offence under this section has been committed by a company, the provisions of section 619 shall apply to such company.
13	Incentives	1. Transfer of right of development for the purpose of acquisition by agreement: When the owner of any Heritage Building is not willing to preserve or conserve any Heritage Building, the Municipal Commissioner may, for the purpose of acquisition of such Heritage Building by agreement and on the recommendation of the Heritage Conservation Committee and with the approval of the Mayor-in-Council, allow the transfer of right of development of such Heritage Building, which shall be heritable and transferable, to the owner of such Heritage Building in such manner, and subject to such conditions, as may be prescribed. 2. Right of access to Heritage Building acquired by Corporation: Subject to such rules or regulations as may be made under this Act, every person shall have the right of access to any Heritage Building acquired by the Corporation. 3. Sub-lease of Heritage Building: The Corporation shall have the right to allow the transfer of right of development to the lessee of a Heritage Building where the unexpired period of the term of lease is for 90 years, and to take the Heritage Building on sub-lease by agreement, if there is provision for such sub-lease in the deed executed between the owner and the lessee, provided that the question of payment of premium or rent in such case to the owner shall not, notwithstanding any agreement in this behalf, arise, and if the owner as confirming party to the agreement waives the right to receive any further payment of such premium or rent. 4. Exemption of rates and taxes: If the owner of a Heritage Building enters into an agreement with the Corporation to maintain, preserve and conserve such Heritage Building properly at his own expenses, the Corporation may, in such case, exempt wholly or partly the owner of such Heritage Building from payment of rates of taxes or fees for supply of water or any other charge in respect of such Heritage Building.

Kolkata		
S. No.	Provisions	Regulations
14	Owner's Responsibility	<i>Every owner or occupier of any Heritage Building declared as such by the Corporation shall maintain, preserve and conserve it and shall not change its use in contravention of the provisions of this Act or the rules or the regulations made there under for its maintenance, preservation or conservation. Elements of the Building, which are not compatible with the whole or part of the Building, should be removed with the approval of Heritage Conservation Committee.</i>

Section 05 Findings from Howrah, West Bengal

Sections in Italics are verbatim from the **Howrah Municipal Corporation Act, 1980**.

Table 17: Findings from Heritage Protection Norms – Howrah

Howrah		
S. No.	Provisions	Regulations
1	Institutional Framework	Heritage Conservation Committee.
2	Grading/Listing	<i>The gradation of a Heritage Building according to its historical, architectural, environmental or ecological purpose shall be such as may be prescribed.</i>
3	Selling or leasing out of the Heritage Property	<i>The Corporation may acquire, purchase or take on lease any Heritage Building for the purpose of preservation and conservation thereof: Provided that in the case of a Heritage Building declared as such for the purpose of preservation and conservation as required under sub-clause (ii) of clause (a) of sub-section (4) of section 31 of the West Bengal Town and Country (Planning and Development) Act, 199, the approval of the concerned department of the State Government shall be taken.</i>
4	Maintenance of Heritage Building	Agreement with owner of Heritage Building pending acquisition: <i>The Commissioner may, pending acquisition of a Heritage Building by the Corporation and with the approval of the Mayor-in-council, propose to the owner of the Heritage Building to enter into an agreement for a specified period for the maintenance of Heritage Building.</i> Voluntary contribution and agreement with any voluntary organization, person or company: <i>The commissioner may receive voluntary contributions towards the cost of maintaining any Heritage Building and may give order as to the management and application of such contributions for the purpose of preservation and conservation of Heritage Building.</i>
5	Taking over management and control of Heritage Building	<i>If the Commissioner, on receipt of any information, is satisfied that the owner of a Heritage Building fails to preserve or conserve the Heritage Building, the Commissioner may, when the Heritage Building is vacant and after hearing the owner, by order in writing, take over the management and control of such Heritage Building for the purpose of preservation and conservation thereof, suspending the right of the owner to transfer such Heritage Building</i>

	Howrah	
S. No.	Provisions	Regulations
		for a maximum period of five years, subject to acquisition either by agreement or under the provisions of the Land Acquisition Act, 1894 (1 of 1894). 2. The Commissioner shall thereafter notify the Heritage Building for letting it out by agreement to any person as tenant for the purpose as aforesaid, and the owner shall be entitled to an amount equal to the reasonable letting value of the Heritage Building as rent less the cost on account of preservation and conservation of the Heritage Building.
6	Penalties	1. Any person who destroys, removes, alters, defaces or misuses any Heritage Building or does any act or abets in the commission thereof, shall be punishable with rigorous imprisonment for a term which may extend to three years and also with fine which may extend to fifty thousand rupees and, in default, with further rigorous imprisonment for six months. 2. Any court convicting any person under this section shall, by order, direct such person to restore the Heritage Building to its former shape and beauty at his cost, and any failure to comply shall be deemed to be a continuing offence and such person shall be punishable with an additional fine of rupees two hundred and fifty for every day during which such contravention or failure continues after conviction for the first such contravention.
7	Incentives	3. Transfer of right of development : When the owner of any Heritage Building is not willing to preserve or conserve, the Commissioner may for the purpose of acquisition of such Heritage Building by agreement and on the recommendation of the Heritage Conservation Committee and with the approval of the Mayor-in-Council, allow the transfer of right of development of such building, which shall be heritable and transferable, to the owner of such Heritage Building in such manner, and subject to such conditions, as may be prescribed. 4. Right of access to Heritage Building acquired by Corporation: Subject to such rules or regulations as may be made under this Act, every person shall have the right to access to any Heritage Building acquired by the Corporation. 5. Sub-lease of Heritage Building: The Corporation shall have the right to allow the transfer of right of development to the lessee of a Heritage Building where the unexpired period of the term of lease is for 90 years, and to take the Heritage Building on sub-lease by agreement, if there is provision for such sub-lease in the deed executed between the owner and the lessee, provided that the question of payment of premium or rent in such case to the owner shall not, notwithstanding any agreement in this behalf, arise, and if the owner as confirming party to the agreement waives the right to receive any further payment of such premium or rent. 6. Exemption of rates and taxes - If the owner of Heritage Building agrees to maintain, preserve and conserve at his own expenses, the Corporation may exempt wholly or partly the owner from payment of rates or taxes or fees for supply of water or any other charge in respect of such Heritage Building.
8	Owner's Responsibility	Every owner or occupier of any Heritage Building declared as such by the Corporation shall maintain, preserve and conserve it and shall not change its use in contravention of the provisions of this Act or the rules or the regulations made there under for its maintenance, preservation or conservation.

Section 06 Findings from Chandigarh

Sections in Italics are verbatim from the **Chandigarh Master Plan – 2031**.

Table 18: Findings from Heritage Protection Norms – Chandigarh

Chandigarh			
S. No.	Provisions		Regulations
1	Institutional Framework		Expert Heritage Committee
2	Grading/Listing		Buildings, Campuses, and Natural Features, which have been listed for Heritage Status have been categorized as Heritage Zones, Heritage Precincts, and Heritage Buildings by the Expert Heritage Committee. 13 Zones have been shortlisted for Heritage status and graded in three categories.
	Grade I	Category	<i>Buildings and Precincts of national or historic importance.</i>
		Scope for Changes	1. <i>No interventions be permitted either on exterior or interior.</i> 2. <i>Essential and minimum changes allowed in conformity with the original, in the interest of strengthening and prolonging the life of the buildings/or precincts or any part or features thereof.</i>
	Grade II	Category	<i>Buildings and Precincts of regional or local importance.</i>
		Scope for Changes	<i>No external change is to be permitted; however, only limited internal change is permitted which does not affect the exterior of the building.</i>
	Grade III	Category	<i>Building and Precincts of importance for townscape.</i>
		Scope for Changes	1. <i>Internal changes may by and large be allowed.</i> 2. <i>Changes can include extensions and additional buildings in the same plot or compound.</i>

Section 07 Findings from Nagpur

Sections in Italics are verbatim from the **Development Control and Promotion Regulations, 2018 for Nagpur Metropolitan Regional Development Authority** (Nagpur Metropolitan Area Development Plan), Urban Development Department, Government of Maharashtra.

Table 19: Findings from Heritage Protection Norms – Nagpur Metropolitan Area

Nagpur Metropolitan Area			
S. No.	Provisions		Regulations
1	Grading/Listing		Grade I, II and III
	Grade I	Category	Buildings and precincts of National or historic importance

Nagpur Metropolitan Area			
S. No.	Provisions		Regulations
		Scope for Changes	1. No interventions be permitted either on exterior or interior 2. Absolutely essential and minimum changes, in the interest of strengthening and prolonging the life of the buildings or precincts. 3. Repairs shall follow conservation norms based on international standards.
		Procedure (Development permission)	Development permission for the changes would be given by the Commissioner on the advice of the Heritage Conservation Committee to be appointed by the State Govt.
	Grade II	Category	<i>Buildings and Precincts of regional and local importance</i>
		Scope for Changes	1. Grade-II (A): Internal changes and adaptive reuse and external changes may by and large be allowed but subject to strict scrutiny. 2. Grade-II (B): In addition to the above, extension or additional building in the same plot or compound could, in certain circumstance; extension is not larger than the original building in terms of mass and scale.
		Procedure (Development permission)	Development permission for the changes would be given by the Municipal Commissioner on the advice of the Heritage Conservation Committee to be appointed by the State Government.
	Grade III	Category	<i>Buildings and Precincts of importance for townscape</i>
		Scope for Changes	<i>External, internal changes and adaptive reuse would by and large be allowed. Changes can include extensions and additional buildings in the same plot or compound.</i>
		Procedure (Development permission)	Development permission for the changes would be given by the Municipal Commissioner on the advice of the Heritage Conservation Committee to be appointed by the State Government.
2.	General Guidelines for development/ redevelopment/ repairs etc. within Heritage area/ precinct/ asset/ building	Signage design and controls	Signs and outdoor display structures: 17.1 No display or advertising signs and outdoor display structures on listed buildings and/or the heritage precincts shall be permitted except in accordance with Part X (Signs and Outdoor Display structures) of the National Building Code of India. 17.2 Prohibition of advertising signs and outdoor display structures in certain cases: Notwithstanding the provisions of 14.1, no advertising sign or outdoor display structures shall be permitted on Buildings of Architectural, Aesthetic, Historical or Heritage importance as may be decided by the Municipal Commissioner, on the advice of the Heritage Conservation Committee or on Government buildings, save that in the case of Government buildings outdoor display structures may be permitted if they relate to the activities for the said buildings own purposes or related programs. Provided that if the Heritage Conservation Committee so advises, the Municipal Commissioner shall refuse permission for any signs or outdoor display structure.

Nagpur Metropolitan Area		
S. No.	Provisions	Regulations
	Skyline	Maintaining skyline and Architectural harmony: <i>Buildings included in the Heritage Precincts or in the vicinity of Heritage sites shall maintain the skyline in the Precincts and follow the architectural style (without any high-rise or multi-storeyed development) as exists in the surrounding area, so as not to diminish the value and beauty or the view from the said Heritage Buildings/Heritage Precincts. The development within the precinct or in the vicinity of Heritage sites shall be in accordance with the guidelines framed by the Municipal Commissioner on the advice of the Heritage Conservation Committee.</i>
3.	New construction/ Development/ Re-Development/ Addition/ Alterations or Extensions to Existing Structure	3. Restriction on development/re-development/repairs etc.: 3.1 No development or re-development or engineering operations or additions, alterations, repairs, renovations including the painting of buildings, replacement of special features or plastering or demolition of any part thereof of the said Listed Buildings or Listed Precincts or Listed Natural Features shall be allowed except with the prior written permission of the Municipal Commissioner. 3.2 In relation to the religious buildings in the said lists, the changes, repairs, additions, alterations and renovations required on religious grounds mentioned in sacred texts, or as part of holy practices laid down in the religious codes may be treated as permissible, subject to their being in accordance and consonance with the original structure and architecture, designs, aesthetics and other special features thereof. 3.3 In the case of Streets, Heritage Precincts, Areas and Natural Features notified as per the provisions of this Regulation, development permissions shall be granted in accordance with the special separate regulations prescribed for respective streets, precincts/natural features, areas which shall be framed by the Municipal Commissioner on the advice of the Heritage Conservation Committee. 3.4 Provided that in exceptional cases, for reasons to be recorded in writing, the Municipal Commissioner may overrule the advice of the Heritage Conservation Committee. Provided further that the power to overrule the advice of the Heritage Commissioner shall not be delegated by the Municipal Commissioner to any other officer. Only in exceptional cases, for reasons to be recorded in writing, the Municipal Commissioner may refer the matter back to the Heritage Conservation Committee for reconsideration. The decision of the Heritage Conservation Committee after such a reference shall be final.

Nagpur Metropolitan Area		
S. No.	Provisions	Regulations
4	Others	Restrictive Covenants: Restrictions existing as on date of this regulation imposed under covenants, terms and conditions on the leasehold plots either by the State Government or Municipal Corporation or by NIT shall continue to be imposed, in addition to Development Control Regulations. However, in case of any conflict between the Heritage Preservation Interest/Environmental Conservation, and the said Development Control Regulations, this Heritage Regulation shall prevail.
		9. Power to alter, modify or relax other development control regulations: 9.1 If there are any Development Plan/Master Plan reservations shown on Heritage Buildings and sites or on listed natural features the same shall not be implemented. If required, the Municipal Commissioner, on the advice of the Heritage Conservation Committee, shall move Government to get these reservations deleted/modified under Section 37 of the MRTTP Act, 1966.
		9.2 On the advice of the said Heritage Conservation Committee and for reasons to be recorded in writing, the Municipal Commissioner shall alter, modify or relax the provisions of other Development Control Regulations/Buildings Byelaws of Nagpur City (hereinafter referred to as 'the said Regulations') if it is needed for the conservation, preservation or retention of Historic and/or Aesthetic and/or cultural and/or Architectural quality of any Listed Buildings/Heritage Buildings of Listed Precincts/Heritage Precincts and the preservation of any listed natural features and or environment.
		9.3 The Municipal Commissioner shall take all steps to ensure that the Listed Buildings and Precincts are demarcated on the Development Plan as soon as the Heritage List is published
		9.4 During the preparation of the Development Plan, the Heritage Conservation Committee shall be consulted in order to ensure that no development proposal is planned on Heritage Buildings, sites or natural features and so as to ensure the protection of all Heritage Buildings, sites, precincts and natural features.
5	Penalties	6. Penalty for Unauthorized Development 6.1 Violation of the regulations shall be punishable under the provisions of the Maharashtra Regional and Town Planning Act, 1966 regarding unauthorized development. However, the amount of fine shall be decided by the Municipal Commissioner on the advice of the Heritage Conservation Committee. Any person who, whether at his own instance or at the instance of any other person commences, undertakes or carries out development without permission in a Heritage Building, site, precinct or a natural feature, or changes the use of the Heritage Building or site to commercial, shall on conviction, be punished with a fine which may extend to Rs. 50,000/- in addition to the cost of restoring the said Heritage Building and site to its original condition and form. On failure to comply, the person shall be punished with a fine

Nagpur Metropolitan Area		
S. No.	Provisions	Regulations
		extending to Rs. 250 for every day during which such a contravention continues. The amount of fine shall be decided by the Municipal Commissioner on the advice of the Heritage Conservation Committee from time to time. 6.2 It shall be open to the Heritage Conservation Committee to consider a request for rebuilding/reconstruction of a Heritage Building or part of a Heritage Building that was unauthorizedly demolished or damaged, if the Committee feels that it would enhance the Heritage Value of the Precinct or of a partially demolished Heritage Building. Provided that the total Built-Up area of the said building is not in excess of the total Built- Up area of the original Heritage Building.
6	Incentives	11. Incentive use of Heritage Buildings: In the case of buildings included in the Heritage Conservation List, if the owner/owners agree to maintain the listed Heritage Building as it is in the existing state and to preserve its Heritage state with due repairs and the owner/owners give a written undertaking to that effect, they may be allowed with the approval of the Heritage Conservation Committee to convert part or whole of the non-commercial area to commercial/office use. Provided that if the Heritage Building is not maintained suitably or if the Heritage Value of the Building is allowed to be spoiled in any manner, the Municipal Commissioner shall withdraw the permission forthwith. Listing does not prevent change of ownership or usage. However, such usage should be in harmony with the said Listed Precinct/Building.
		14. Heritage Conservation Fund: With a view to give monetary help for conservation/repairs of listed Heritage Buildings, a separate fund is to be constituted at the Municipal Corporation level within a period of six months after the publication of these regulations. Provision of such fund may also be made through District Planning and Development Council budget and which would be kept at the disposal of Municipal Commissioner, who would make disbursement from the funds on the advice of the Heritage Conservation Committee. The Municipal Commissioner may impose a special cess for the conservation of Heritage Buildings; provided that funds shall only be provided on the advice of the Heritage Conservation Committee.
		10. Grant of TDR: 10.1 If any application for development, alteration, modification of the Heritage Precincts or Listed Buildings is rejected under this Regulation or under the special regulations or while granting such permission any conditions are imposed on the owner which deprives him/her of use of the FSI, the said owner shall be compensated by grant of Development Rights Certificate.

Nagpur Metropolitan Area		
S. No.	Provisions	Regulations
		10.2 If the owners of Heritage Buildings agree to conserve their buildings and maintain them in a suitable manner, the Municipal Commissioner may, on the advice of the Heritage Conservation Committee, provide TDR to the owner. Provided, that the owner submits a conservation proposal to the Heritage Conservation Committee in the prescribed format. TDR shall only be provided on sanctioning of such a proposal by the Heritage Conservation Committee, and on receipt of a written undertaking by the owner in the prescribed format. Violation of the terms of the undertaking shall be punishable under the provisions of these regulations, and as per the provisions regarding unauthorized development in the Maharashtra Regional Town Planning Act, 1966.
		10.3 The owner of the Heritage Precincts/Listed Buildings shall be entitled to use the said development rights in the city subject to conditions in the Development Rights Certificate and Regulations as may be prescribed by the Government from time to time. The extent of TDR certificate to be granted may be determined by the Commissioner, Nagpur Municipal Corporation in consultation with the Heritage Conservation Committee.
7	Owner's Responsibility	4. Responsibility of the owners of Heritage Building: It shall be the duty of the owners/occupants including tenants of heritage buildings and of Buildings in Heritage Precincts to carry out regular repairs and maintenance of the buildings at their own cost after prior approval of the Heritage Conservation Committee, and shall not change their use in contravention of the Heritage regulations. It shall be the responsibility of the Local Authorities/State Government and Central Government to maintain the Listed Buildings owned by these authorities so as to fully preserve their Heritage Value.
8	Mechanism for sanction	5. Procedure for Obtaining Permission: 5.1 Every person who intends to carry out any development or conservation/preservation/restoration/renovation of a Heritage Building or within a Heritage Precinct shall give notice in writing to the Heritage Conservation Committee in the prescribed format, and this application shall be accompanied by the plans and reports as required under Section 35* of the DC Rules. * DC Rule 35 should include the sanctioning procedure, which we have submitted earlier. 5.2 The Heritage Conservation Committee shall scrutinize the proposal and may grant sanction or refuse the proposal, provided that before doing so the Committee shall provide a hearing to the applicant, and to any persons who may have submitted suggestions/objections in relation to the said proposal. While sanctioning or refusing sanction, the Heritage Conservation Committee shall provide a written justification for its decision. If within 60 days the Heritage Conservation Committee fails to intimate in writing to the applicant of its refusal or sanction with such modifications or directions, the proposal shall be deemed to have been sanctioned, provided that the proposal is strictly in conformity with the Conservation Guidelines formulated by

Nagpur Metropolitan Area		
S. No.	Provisions	Regulations
		<i>the Heritage Conservation Committee, Bye-Laws, Regulations in force, and no development is carried which will cause damage to any Heritage Building, Heritage site or Natural Feature.</i>

Index

I. Abbreviations

1.	AMASR, 1958	:	Ancient Monuments and Archaeological Sites and Remains Act, 1958
2.	AMASR, 2010	:	Ancient Monuments and Archaeological Sites and Remains Act, 2010
3.	ARD	:	Air Rights Development
4.	ASI	:	Archaeological Survey of India
5.	BG	:	Broad Gauge
6.	BOD	:	Board of Directors
7.	BUA	:	Built-up Area
8.	CCP	:	Comprehensive Conservation Plan
9.	CTRL	:	Channel Tunnel Rail Link
10.	DDA	:	Delhi Development Authority
11.	EIC	:	East India Company
12.	EIR	:	East India Railway
13.	EoI	:	Expression of Interest
14.	FSI	:	Floor Space Index
15.	GDCR	:	General Development Control Regulations
16.	GOI	:	Government of India
17.	HA	:	Heritage Asset
18.	HAR	:	Heritage Assessment Report
19.	HBCR	:	Heritage Building Condition Report
20.	HCC	:	Heritage Conservation Committee
21.	HCRP	:	Heritage Conservation and Reuse Plan
22.	HG	:	Halt stations
23.	HIA	:	Heritage Impact Assessment
24.	HMMP	:	Heritage Management and Maintenance Plan
25.	HMPVC	:	Handbook for Master Planning and Value Creation
26.	HRAP	:	Heritage Railway Advertisement Policy
27.	HRC	:	Heritage Regulation Card
28.	HSB	:	Historic Station Building
29.	HVAC	:	Heating, Ventilation, and Air Conditioning
30.	ICOMOS	:	International Council on Monuments and Sites
31.	IMMR	:	Inspection, Maintenance, Monitoring and Repair
32.	INTACH	:	Indian National Trust for Arts and Cultural Heritage
33.	IR	:	Indian Railways
34.	IRSDC	:	Indian Railway Stations Development Corporation
35.	ISBT	:	Inter State Bus Terminal/ Inter-State Bus Terminus
36.	IUCN	:	International Union for Conservation of Nature
37.	Jn.	:	Junction
38.	KMC	:	Kolkata Municipal Corporation
39.	MCA	:	Model Concession Agreement
40.	MCD	:	Municipal Corporation of Delhi
41.	MCGM	:	Municipal Corporation of Greater Mumbai
42.	MEP	:	Mechanical, Electrical and Plumbing
43.	MG	:	Metre Gauge
44.	MHCC	:	Mumbai Heritage Conservation Committee
45.	MoEF&CC	:	Ministry of Environment, Forest and Climate Change
46.	MoHUA	:	Ministry of Housing and Urban Affairs
47.	MoR	:	Ministry of Railways
48.	MoUD	:	Ministry of Urban Development
49.	MPD	:	Master Plan for Delhi
50.	MRTS	:	Mass Rapid Transit System
51.	MSRCD	:	Manuals for Station Redevelopment including Commercial Development
52.	MSSR	:	Manual of Standards and Specifications for Railway Stations 2009
53.	NBC	:	National Building Code 2016
54.	NDMC	:	New Delhi Municipal Council
55.	NG	:	Narrow Gauge

56.	NMA	:	National Monuments Authority
57.	NPS	:	National Park Service (United States)
58.	NSG	:	Non-Suburban Stations
59.	NSW	:	New South Wales
60.	NTOD	:	National Transit Oriented Development
61.	OoS	:	Object of Significance
62.	OUV	:	Outstanding Universal Values
63.	PDC	:	Property Development Card
64.	PIM	:	Project Information Memorandum
65.	PSMC	:	Plan Sanctioning and Monitoring Committee
66.	RA, 1989	:	Railway Act, 1989
67.	RHA	:	Railway Heritage Asset
68.	RLDA	:	Rail Land Development Authority
69.	SG	:	Suburban Stations
70.	SoC	:	State of Conservation
71.	SOP	:	Standard Operating Protocol
72.	SSEF	:	Shakti Sustainable Energy Foundation
73.	TC	:	Technical Consultant
74.	TCPO	:	Town and Country Planning Organisation
75.	TDR	:	Transferable development rights
76.	TOD	:	Transit Oriented Development
77.	ToR	:	Terms of Reference
78.	UBBL	:	Unified Building Bye-Laws 2016
79.	ULB	:	Urban Local Body (ies)
80.	UNESCO	:	United Nations Educational, Scientific and Cultural Organization
81.	WH	:	World Heritage
82.	WHC	:	World Heritage Convention
83.	WHP	:	World Heritage Property

II. Definitions of Terms Used

Term	Definition
Adaptive Reuse/ Continued Use	Adaptive Reuse/ Continued Use of RHA refer to the process of re-use/ continued use/ new use proposed for an RHA which is suitable to its intrinsic value, does not damage the heritage values of the asset and is compliant with all required policies, standards and guidelines for Conservation and Management of the Heritage Asset.
1. Archaeological Site and Remains	Archaeological Site and Remains shall have the same meaning as defined in the AMASR Act'2010.
2. Authenticity	Authenticity shall have the same meaning as defined in the updated Operational Guidelines of the World Heritage Convention' 72.
3. Condition Assessment	Condition Assessment shall be the statement reporting the actual state of RHA achieved through scrutiny of the built fabric, study of history of defect, quality of intervention, non-destructive and where necessary destructive testing et al and be conveyed through Condition Mapping and Report. <u>For the purpose of this definition, the Explanatory note is as below:</u> a) The report comprising Condition Assessment shall detail out: b) Building pathology, grading of defects, defining nature of actions. c) Identify and Prioritize interventions/ conservation works. d) Establish Degree of Adaptability and Life Cycle Cost. e) Inform developing estimates, in identifying specifications, project management and monitoring schedules for implementation. f) Identify trends affecting significance and potential opportunities (assist in future planning). g) Identify skills needed for implementation and quality (and impact of) previous interventions.
4. Condition Mapping	Condition Mapping shall mean a tool for systematic graphical recording of the types (active and passive) of pathological, mechanical, and any causes that lead to deterioration of the RHA and shall supplement Condition Assessment. <u>For the purpose of this definition, the Explanatory note is as below:</u> Condition Mapping shall be expressed in the form of drawings, images, photographs, diagrams et al best representing one's observations of SoC. Condition Mapping undertaken based on visual observations shall only be a starting point for Condition Assessment and follow-up action and shall always be supplemented with non-destructive testing.
4. Conservation area	Conservation area shall mean an area that includes built or natural assets that are recognized for its significant aesthetic, social, ecological, environmental, or spiritual contribution at local, regional or national level or to the Railways itself. <u>For the purpose of this definition, the Explanatory note is as below:</u> Conservation Area may include natural and man-made contexts, viewpoints, groups of buildings, structures and open spaces including archaeological and paleontological sites, constituting human settlements in an urban or rural environment, historic towns, old urban quarters, villages as well as homogeneous monumental groups.
5. Contributory Features, Assets and Resources	Contributory Features, Assets and Resources shall mean those significant built or natural components in the precinct of the Railway Station Area that are characteristic to a place, community or region, that may comprise features of the HA or amplifying the values of the Railway HA or may demonstrate the evolution of the context. <u>For the purpose of this definition, the Explanatory note is as below:</u> 'Contributory' elements, features or resources are typically externally intact, but may have visible changes which do not detract from the contribution to the Heritage Area.
6. Cultural landscapes	Cultural landscapes shall mean assets that exhibit characteristics, or which represent the values of a community(ies) because of human interaction with

Term	Definition
	the environment. The emphasis in a Cultural Landscape is the ability of the asset to demonstrate the interrelationship as well as the results of it. <u>For the purpose of this definition, the Explanatory note is as below:</u> <i>A set of ideas and practices embedded in an area or a place that demonstrate the relationship between intangible and tangible heritage.</i> <i>The term "cultural landscape" embraces a diversity of manifestations of the interaction between humankind and the natural environment. Cultural landscape is applied to areas of landscape including landscapes where natural features have special meanings to people, to highly modified or developed landscapes. Such lands may have continuing use or may be a collection of extant remains.</i> <i>There are three broad categories of Cultural landscapes, namely:</i> • <u>Landscape designed and created intentionally by man</u> - A defined and designed landscape intentionally created (by man). These range from gardens and parklands, landscapes constructed for aesthetic purposes which may or may not be associated with spiritualism or other monumental buildings and ensembles. • <u>Organically evolved landscape</u> - An organically evolved landscape that are a result of an initial social, economic, administrative, and/or religious imperative and has developed its present form by association with and in response to its natural environment. Such landscapes reflect that process of evolution in their form and component features and can be classified as follows: ○ <u>relict (or fossil) landscape</u> - is one where an evolutionary process concluded abruptly or over a period of time. Its significant distinguishing features are visible in material form. ○ <u>continuing landscape</u> - is one which retains an active social role in contemporary society and is associated with the traditional way of life, and in which the evolutionary process is still in progress and are exhibited through significant material evidence. • <u>Associative cultural landscape</u> - is one where powerful religious, artistic, or cultural associations of the natural element rather than material cultural evidence, is demonstrated.
7. Degree of Adaptability	Degree of Adaptability shall mean the acceptable limits or degree or range or extent of proposed change that may be permitted so that it does not undermine the integrity of the RHA or lessens its Life Cycle.
8. Documentation	Documentation shall mean a comprehensive record of features and details presented in the form of drawings, photographs, videos or any other suitable media that conveys all information about a RHA comprehensively.
9. Heritage Area	Heritage Area shall mean a defined buffer around a protected or unprotected structure, precinct or area that may include protected views, Contributing and Non-Contributing Features. <u>For the purpose of this definition, the Explanatory note is as below:</u> <i>A Heritage Area is a designated conservation area characterized by an ensemble of built volume and unified by similar use, architectural style, association, or historical development.</i> <i>In such areas, development is regulated to compliment and accentuate the Heritage Assets.</i> <i>Individual Heritage Assets in such areas may or may not be under a single owner/ agency.</i> <i>The boundaries of the Heritage Area identified as a part of this project may or may not be the same as a Heritage Zone(s) identified in Master Plan/ Zonal Plans. Where the lines coincide with the provisions of Policy and Guidelines for Railway Heritage Assets that apply over and above those in the Master Plan/ Zonal Plan.</i>

	Term	Definition
10.	Heritage Railways	Heritage Railways may include historic or preserved railways, museum railways, working railways, tramways, tram museums and tourist railways, and may extend to heritage trains operating on the national network and other railways.
11.	Heritage Zone	Heritage Zone shall mean a Conservation Area which is designated as such by a local planning authority or delineated in the Master Plan / Zonal Plan because it is of special architectural or historical interest the character of which ought to be preserved.
12.	Historic Environment	Historic Environment shall mean the characteristic physical environs of the Heritage Assets having built and natural features that influence the static or dynamic way(s) the area is perceived, experienced, and enjoyed and shall include Contributing and Non-Contributing Feature(s), Asset(s), or Resource(s). <i>For the purpose of this definition, the Explanatory note is as below:</i> <i>Historic Environment may include natural and man-made contexts, viewpoints, groups of buildings, structures and open spaces including archaeological and paleontological sites, constituting human settlements in an urban or rural environment, historic towns, old urban quarters, villages as well as homogeneous monumental groups.</i> <i>The functions of features and assets included in the Historic Environment may greatly vary from the Railway Heritage Asset.</i>
13.	Intangible Heritage Asset	Intangible Heritage Asset shall encompass traditions, practices, representations, expressions, knowledge, skills, crafts, folklore – as well as instruments, objects, artefacts, and cultural spaces associated therewith – that communities, groups and, in some cases, individuals recognize as part of their cultural identity and is associated to RHA. <i>For the purpose of this definition, the Explanatory note is as below:</i> <i>Intangible cultural heritage, transmitted from generation to generation, is constantly recreated by community(ies) in response to their environment. Their interaction with nature, their history, it provides them with a sense of identity and continuity, thus promoting respect for cultural diversity and human creativity.</i>
14.	Integrity	Integrity shall have the same meaning as defined in the Operational Guidelines of the World Heritage Convention' 72.
15.	Inventory	Inventory shall mean an updated dossier of comprehensive and detailed information and records like images, drawings etc., associated history, building archaeology, significant features, legal documents, ownership and revenue data, maintenance and conservation history, vulnerabilities et al. <i>For the purpose of this definition, the Explanatory note is as below:</i> <i>An inventory may be preceded by a Listing.</i> <i>The inventory is intended to be kept updated, to support preparation of PIM and shall be the basis of decision-making, inform maintenance regime and guide mobilization of funds and programs. Such information supports tourism, outreach, develop marketing strategy and brand building.</i> <i>Inventory shall have pictorial and written documentation conveying the significance of the RHA and features, including building's history, physical aspects like mass, volume, setting, composition, proportion, scale, color, texture, materials, features, craftsmanship, window arrangements, colors, setting and interiors et al are critical for a fruitful project. Therefore, identifying features that make the historic character and planning, in-keeping with its scope and limitations shall determine effectiveness and impact of a proposal and technical soundness of plans emanating from it.</i>
16.	Life Cycle Assessment	Life-Cycle Assessment shall mean the valuation of the RHA including initial investments (conservation), costs that occur during its service life (maintenance, management, and operations) and the social appreciation of the RHA and shall support determining the Degree of Adaptability.

Term	Definition
17. Listing	Listing shall mean a comprehensive list/ catalogue comprising all components and features that together convey the SoS of RHA. <i>For the purpose of this definition, the Explanatory note is as below:</i> <i>It is essentially a list that conveys categories of RHA. It is a checklist for quick reference from project conceptualization, evaluation, monitoring et al. but shall not be the sole basis for decision-making.</i>
18. Mapping	Mapping shall mean a systematic, scientific, and authentic documentation of all-important resources and values within an area in a geospatial format and linked to a BIM database. <i>For the purpose of this definition, the Explanatory note is as below:</i> <i>Mapping shall show the evolution, transformation of RHA, issues affecting it across time, depict loss of heritage and document impact of planning and development.</i> <i>It combines two- and three-dimensional information. It supports the Listing and Inventory databases by assimilating data from multiple sources for area-level planning, communication to different departments/ users, conservation, projects monitoring and management.</i> <i>It also is a ready information source for inventory of land records for revenue related and other allied purposes.</i>
19. Non-contributing element or resource	Non-contributing Asset shall mean any element, resource, building, site, structure, or object that does not add to the historical associations, historical architectural qualities, or archaeological values for which a property is significant for.
20. Railway Heritage Asset	Railway Heritage Asset (RHA) shall mean all part components of the Railway system involved in the operational and non-operational functioning since the inception of the Railways. <i>For the purpose of this definition, the Explanatory note is as below:</i> <i>RHA shall include, but not be limited to historic railways, tourist railways, tramways, railway museums, historic fixed and rolling stocks, canals, housing, fixed and moving structures and equipment currently in use or otherwise (for example, archival material, drawings, designs and prototype models) and have a direct or indirect role in functioning or operating of the Railways system.</i>
21. Skyline	Skyline means the profile of buildings as seen from a distance as defined against the sky.
22. State of Conservation	State of Conservation (SoC) shall mean a conclusive statement indicative of condition of RHA conveyed through a combination of graphical and textual format and shall govern maintenance and management regime of RHA. The SoC is to be written on the basis of detailed studies and analysis of the RHA <i>For the purpose of this definition, the Explanatory note is as below:</i> SoC comprises two parts - Condition Assessment and Condition Mapping.
23. Statement of Significance	Statement of Significance (SoS) shall mean the content conveying how, why, and what is the importance of and important in the RHA. The SoS is to be written on the basis of detailed studies and analysis of the RHA SoS shall be the basis on which decisions are made regarding the identification of RHA and means of ensuring its continuity. It shall also be the basis for developing a resource-specific maintenance, protection, and management regime.
24. Substitute materials	Substitute materials shall mean those products used to imitate historic materials and whose properties shall match the appearance and physical properties of historic materials it is replacing.

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