Techno Feasibility Report

Development of Multi Modal Logistics Hub (MMLH) at Greater Noida in the state of Uttar Pradesh (UP) under Delhi Mumbai industrial corridor (DMIC) project

November 2025

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

ABBREVIATIONS

Abbreviation	Full Form
BG	Broad Gauge
CAGR	Compounded Annual Growth Rate
CAPEX	Capital Cost
CCTV	Closed Circuit Television
CFS	Container Freight Station
CONCOR	Container Corporation of India Ltd.
CRT	Container Rail Terminal
DBFOT	Design Build Finance Operate and Transfer
DFC	Dedicated Freight Corridor
DMIC	Delhi Mumbai Industrial Corridor
DMIC - IITGNL	DMIC Integrated Industrial Township Greater Noida Limited
DNGIR	Dadri-Noida- Ghaziabad Investment Region
DFCCIL	Dedicated Freight Corridor Corporation of India
EDFC	Eastern Dedicated Freight Corridor
EPC	Engineering Procurement & Construction
EPE	Eastern Peripheral Expressway
ESP	Engineering Scale Plan
EXIM	Export Import
FOB	Foot Over Bridge
FOIS	Freight Operation Information System
FY	Financial Year
GDP	Gross Domestic Product

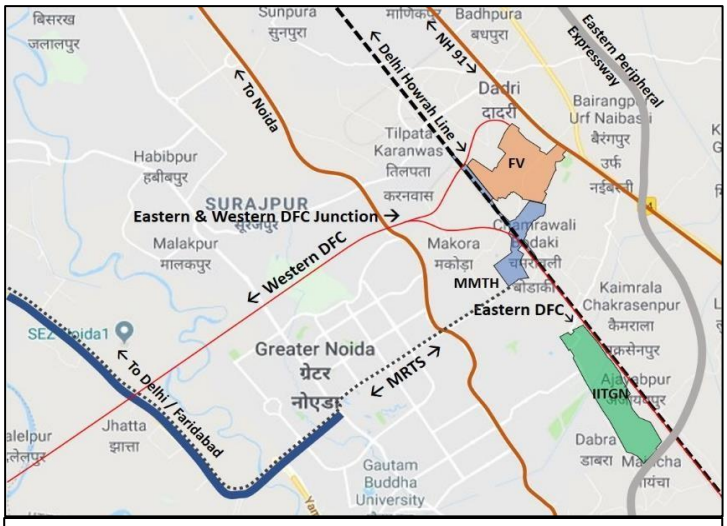
Abbreviation	Full Form
GNIDA	Greater Noida Industrial Development Authority
ICD	Inland Container Depot
INR	Indian Rupee
IPT	Intermediate Public Transport
IR	Indian Railways
IRR	Internal Rate of Return
JNPT	Jawaharlal Nehru Port
MMLH	Multi Modal Logistics Hub
MMLP	Multi Modal Logistics Park
MMTH	Multi Modal Transport Hub
MoR	Ministry of Railways
NCRB	National Crime Records Bureau
NH	National Highway
NHAI	National Highways Authority of India
NMRC	Noida Metro Rail Corporation
OWC	Organic Waste Composter
PAR	Plinth Area Rate
PFT	Private Freight Terminal
PPP	Public Private Partnership
PWD	Public Works Department
PVVNL	Pashchimanchal Vidyut Vitran Nigam Ltd
ROW	Right of Way
RUB	Road Under Bridge

Abbreviation	Full Form
SQFT	Square Feet
STP	Sewage Treatment Plant
WDFC	Western Dedicated Freight Corridor
WGF	Waste Generation Factor
WTP	Water Treatment Plant
Year 5	5^{th} Year of MMLH Operation
Year 10	10^{th} Year of MMLH Operation
Year 15	15^{th} Year of MMLH Operation

1 INTORDUCTION

1.1 Project Background

The Government of India is developing the Delhi-Mumbai Industrial Corridor (DMIC) as a global manufacturing and investment destination. For this purpose, a Special Purpose Vehicle (SPV) named the Delhi-Mumbai Industrial Corridor Development Corporation (DMICDC) (renamed as National Industrial Corridor Development Corporation (NICDC) with effect from February 2020) has been incorporated for the development of various program components of the DMIC project. Dadri-Noida-Ghaziabad Investment Region (DNGIR) in Uttar Pradesh (UP) sub-region of DMIC, has been identified as one of the initial eight (08) short-listed Investment Regions (IRs) in DMIC. To steer the development of the DNGIR, a Multimodal Logistics Hub (MMLH) is envisaged to be developed as a "Freight Village" along with a MMTH (Multi Modal Transport Hub) to facilitate ease of transport for citizens and an Integrated Industrial Township. These projects have been selected as the Early Bird Projects (EBPs) under the development plan for DNGIR.



~479 Ha of land area for the overall project at Greater Noida near DNGIR
~334 Ha of MMLH near the conflux of EDFC and WDFC
~145 Ha of MMTH near Boraki railway station
**All areas are as per revenue records as shared by Land Department GNIDA. As per AutoCAD drawing the MMLH area is ~330.89Ha*

Figure 1-1 Proposed site for MMLH

An MMLH is characterized as a freight handling facility comprising of world-class facilities such as mechanized warehouses, specialized storage solutions and mechanized handling & intermodal transfer of container/bulk/break-bulk cargo. Additionally, an MMLH provides value added services such as crossdocking, customization, stacking and labelling which differentiates it from a typical ICD/ CFS/warehouse. Several merits of MMLH such as excellent transport links, custom clearance facilities, round-the-clock services, single window clearances, and value-added services help to reduce total logistics cost and transit time.

The proposed MMLH at Greater Noida is in congruence to DMIC's vision to create a strong economic base supported by globally competitive ecosystem and state-of-the-art infrastructure facilities. Located at the confluence of Eastern DFC and Western DFC, the MMLH will support the Dedicated Freight Corridor (DFC) towards achieving its targeted potential by providing an integrated logistics facility for efficient storage/transitioning of goods to/from the Uttar Pradesh sub-region of the NCR (National Capital Region). The MMLH will improve the efficiency of operations of existing industries

in the region as well as enhance the attractiveness of the region as an investment destination for various industries, warehousing and logistics operators.

The site for the proposed MMLH is strategically located between old NH-91 and the Delhi-Howrah rail line near the point of conflux of the Western and Eastern Dedicated Freight Corridor (DFC) and to the Eastern Peripheral Expressway.

Connectivity to Western and Eastern DFC will be a key strategic advantage for the MMLH, Greater Noida. Further, the proposed facility will provide impetus to investments in the identified location. Key benefits that the facility could offer-

- Strategic location for consolidation of warehouses- located close to key demand centers of NCR region, western Uttar Pradesh
- Easy access/connectivity with DFC will help reduce transit time and effectively lower logistics cost
- Employment generation
- Attracting potential players to kick start investment

1.2 Introduction

1.2.1 Project Identification

Noting the success of planned regional areas/townships/corridors worldwide especially China and Japan, Government of India initiated various concerted efforts in this direction through SEZs and the latest being Dedicated Freight Corridor and Industrial Corridors. With an objective of supporting the development of industrial & economic corridors, several agencies (multilateral, Indian financial institutions etc.) are working with the Government of India and state governments for development of corridors in India viz. Delhi Mumbai Industrial Corridor (DMIC), Vizag Chennai Industrial Corridor (VCIC), Chennai Bangalore Industrial Corridor (CBIC), Bangalore Mumbai Economic Corridor (BMEC), Amritsar Kolkata Industrial Corridor (AKIC) etc. Every corridor presents a unique opportunity for industrial development – for example a) VCIC is India's first coastal corridor with a renewed focus on the manufacturing sector, b) CBIC is positioned to connect the key industrial pockets in the south India with the gateways – Ports and Airports and c) Delhi Mumbai Industrial Corridor is an ambitious Infrastructure program aiming to develop new industrial cities as 'Smart Cities' and converging next generation technologies across infrastructure sectors.

1.2.1.1 Delhi – Mumbai Industrial Corridor

A Special Purpose Vehicle, Delhi-Mumbai Industrial Corridor Development Corporation Limited (DMICDC) (renamed as National Industrial Corridor Development Corporation (NICDC) with effect from February 2020) was incorporated, as the Project Development Agency for DMIC. This project plans to cover an overall length of 1,504 kilometres between Delhi and Mumbai and aims at developing industrial zones across six states including Delhi, Uttar Pradesh, Haryana, Rajasthan, Gujarat and Maharashtra at an estimated total cost of approximately $100 billion. Most of the projects in DMIC region would be implemented through PPP model and Special Purpose Companies would be established for project implementation, operation, maintenance and management of such facilities.

Figure 1-2 Western DFC Alignment

DMIC is conceived to be developed as a model industrial corridor of international standards with emphasis on expanding the manufacturing and services base and developing DMIC as the 'Global Manufacturing and Trading Hub'. In addition to new Industrial Cities, the program envisages development of infrastructure linkages like power plants, assured water supply, high-capacity transportation and logistics facilities as well as softer interventions such as skill development program for employment of the local populace. The project aims to double the employment potential, triple the industrial production of the country and quadruple exports from the region in five years of implementation.

Figure 1-3 Delhi-Mumbai Industrial Corridor Nodes along WDFC (Phase 1)

This massive infrastructure growth is strongly linked with the development of Western DFC, which is planned between Delhi (NCR) and Mumbai, covering an overall length of 1,483 km with a view to providing efficient logistics services. This corridor has end terminals at Dadri in the NCR area and JNPT Port near Mumbai passing through the States of U.P., Delhi (NCR), Haryana, Rajasthan, Gujarat and Maharashtra. Proposed rail infrastructure is expected to act as the logistical backbone of the DMIC project by offering high-speed

connectivity for High Axle Load Wagons (25 Tonne) of Double Stacked Container Trains supported by high power locomotives.

Project influence area (PIA) of DMIC is defined in the 150 - 200 Km band on either side of Western DFC for infrastructure development and optimization of DFC network. PIA will cover seven states and two Union Territories including Diu & Daman and Dadra & Nagar Haveli.

Several high impact nodes under which Investment Regions (IR's) and Industrial Areas (IA's) would be developed have been identified under the DMIC project. The identified IR's and IA's will have industrial townships with modern infrastructure in terms of logistics (rail, road and air connectivity), power and social infrastructure which will make the region globally competitive for setting up new businesses. Twenty-four such nodes have already been identified across seven states to be developed in phases. Out of these identified nodes, eight nodes are proposed to be developed in phase 1, shown in the map.

1.2.1.2 Dadri – Noida – Ghaziabad Investment Region (IR), Uttar Pradesh

The Dadri-Noida-Ghaziabad Investment Region (DNGIR) is one of the key nodes that has been identified as one of the initial eight short-listed nodes in Phase 1 of DMIC. The proposed DNGIR is strategically located near Western and Eastern DFC, NH-91 (now NH 34) and the Eastern Peripheral Expressway.

Figure 1-4 Location of DNGIR

(EPE) in Western Uttar Pradesh. It also has an added advantage of being located close to Delhi. With the prevailing infrastructure, it is well connected by road and rail to the rest of the country. Noida and Ghaziabad region house IT and electronic industries along with other industries present in the industrial towns which give an edge to the node. DNGIR covers an area of over 200 square kilometres

and proposed to be developed as a global trading and manufacturing hub. DNGIR shall be generating an employment of about 12 lakhs by 2040.

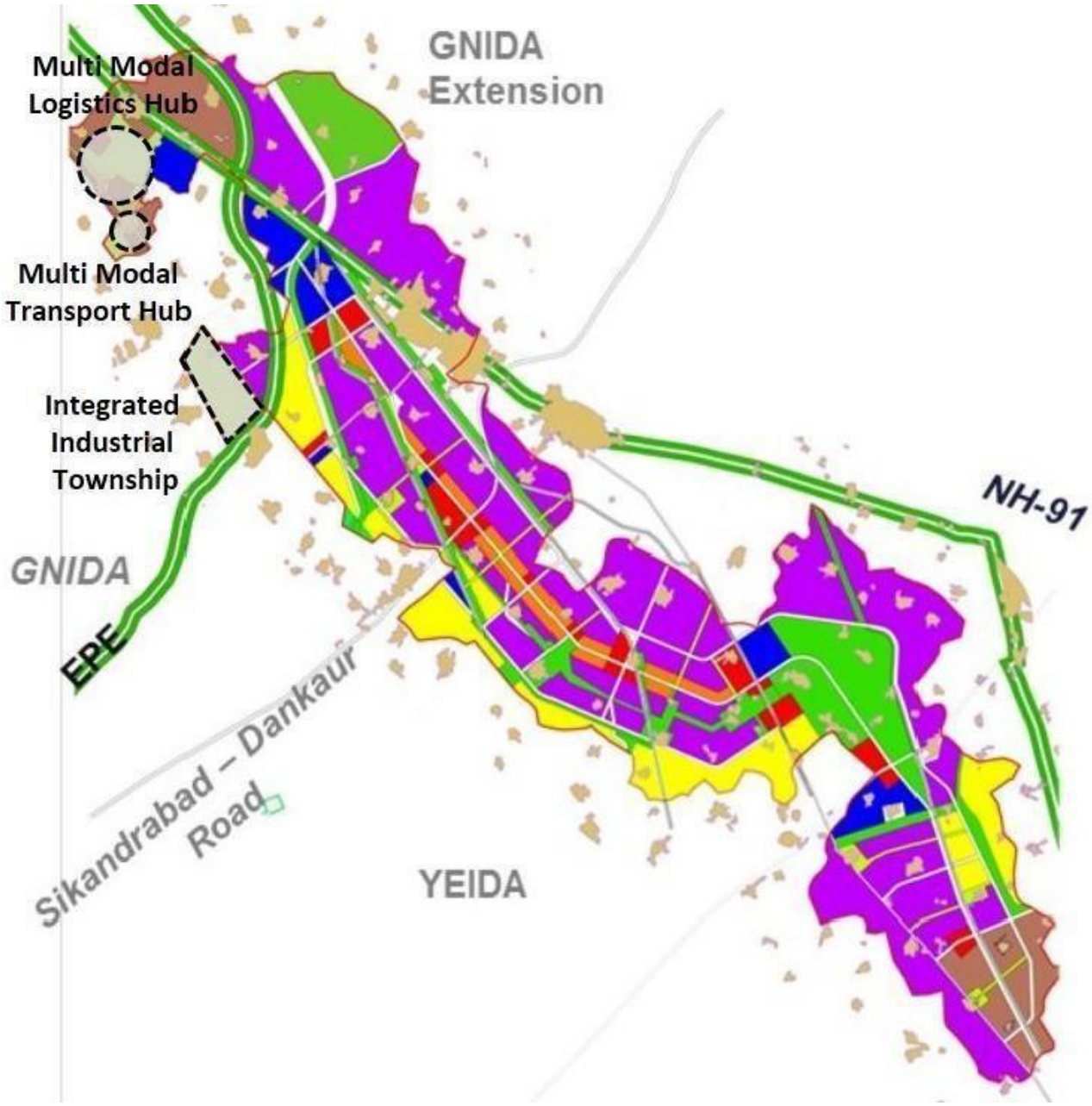


Figure 1-5 Master Plan of DNGIR (Source: IITGNL)

The region has a concentrated presence of number of industries such as IT/ITeS, manufacturing food processing & beverages (sugar & alcohol), textile, chemicals, steel, fabricated metal products, sports goods, automobiles, consumer electronics etc. The proposed investment region is in proximity to alignment of both Eastern and Western Dedicated Freight Corridor.

DNGIR is envisaged as a self-sustaining industrial zone with presence of several industries in food, auto, electrical and electronics and IT/ ITES segment, and world-class infrastructure equipped with

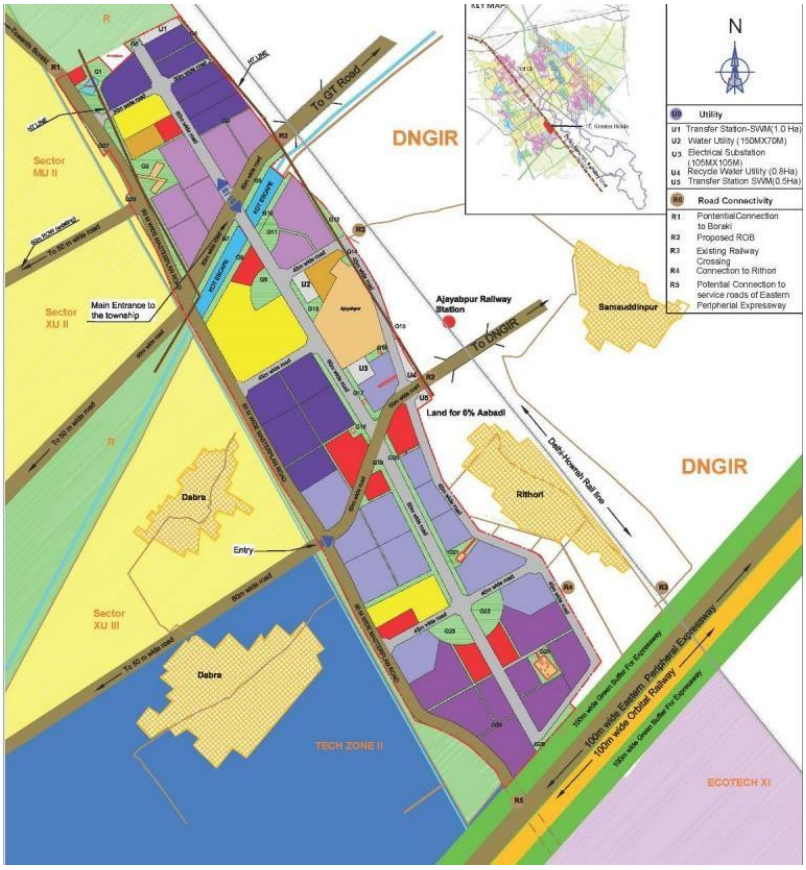
sufficient power supply and transport infrastructure. The key Early Bird Projects identified in the proximity of DNGIR to support its growth are:

- An Integrated Industrial Township
- A Multi Modal Logistics Hub (MMLH) spread over ~323.05 ha (area as per revenue records) near Dadri, which includes land to be acquired for proposed track infrastructure approx. 22 Ha.
- A Multi-Modal Transport Hub (MMTH) at Boraki spread over ~145 ha (area as per revenue records).

1.2.1.3 Integrated Industrial Township in Greater Noida

Integrated Industrial Township in Greater Noida is an initiative to drive Hi-tech, Biotech and IT industries in the region to promote sustainable development. The proposed township will promote industries in the Dadri- Noida-Ghaziabad Investment Region (DNGIR).

Figure 1-6 Master Plan of IIT, DNGIR (Source: DMIC IITGNL)



1.2.1.4 MMLH, Greater Noida

The DMIC project envisages the development of new industrial cities as 'smart cities' and converging new generation technologies across infrastructure sectors. One of the key components of industrial development is efficient supply chains through availability of well-defined logistic infrastructure which leads to reduced logistics cost and delays in terms of shipment. In modern global supply chains

freight transportation, warehousing, custom clearance etc. and many other functions are outsourced by industry players to service providers. Therefore, to provide synergy to DMIC and Dedicated Freight Corridors development, infrastructure requirements in terms of logistics infrastructure like Multi Modal Logistics Hubs are essential.

The proposed MMLH at Dadri will serve as a dry port having facilities for not just storage, aggregation and export/import of industrial freight in the region but also value added services such as banking, insurance, shipping, fashion logistics, simple assembly etc. and other activities related to finishing of goods within the facility alongside commercial space to host freight companies within the campus.

The MMLH will serve the logistics requirements of existing industries in Western Uttar Pradesh and adjoining areas as well as the proposed industries in DNGIR and will make the regional industrial space globally competitive.

Also, proximity and rail connectivity with DFC will help the proposed MMLH to act as a feeder to DFC and will therefore act as a nodal facility for efficient storage/transitioning of goods to/from the UP sub-region of NCR to DFC and would be critical in achieving DFC's target potential.

1.2.1.5 Multi-Modal Transport Hub (MMTH), Greater Noida

Inter modal transport stations or MMTH is a rapidly evolving and developing concept which integrates inter-city, regional and local public transport systems within a single hub/facility. These hubs are not standalone public transit entities but are integrated with commercial/residential/mix-use districts referred to as Transit Oriented Development (TOD).

The Railway station at Boraki, Greater Noida is proposed to be developed as a transport hub with a state-of-the- art railway terminus further supplemented by an Interstate Bus Terminus (ISBT) and Mass Rapid Transit System (MRTS) station. It will facilitate efficient infrastructure for passenger movement in NCR region.

The proposed MMTH will act as a catalyst for fuelling growth within the investment region by improving connectivity, providing accessibility, increasing efficiency and safety in a way that benefits the entire region.

1.2.2 Need for MMLH in the region

Proposed MMLH at Dadri will have facilities for storage, aggregation and export/import of industrial freight in the region, alongside other logistics value added services including facility to provide commercial space to host freight companies within the identified location.

Strategic advantage for MMLH at Dadri:

The proposed logistics hub at Dadri is located strategically close to the congruence point of Eastern and Western DFC, which imparts a natural advantage to the facility to tap the potential traffic generated on the two corridors and help improve operational efficiency.

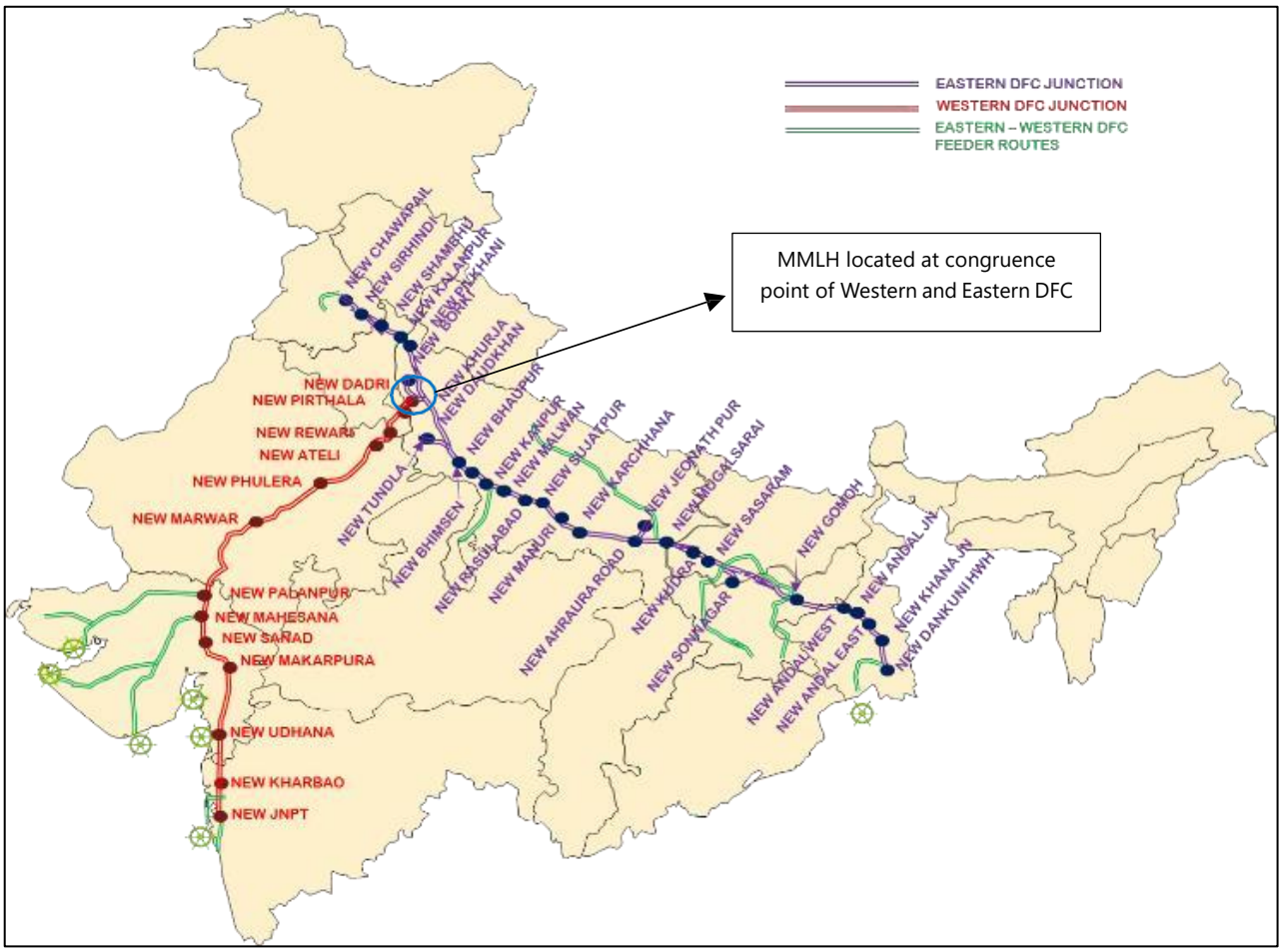


Figure 1-7 Location of MMLH on DFC Corridor

The MMLH will serve the logistics requirements of existing industries in western Uttar Pradesh and adjoining areas as well as the proposed industries in Dadri-Noida-Ghaziabad Investment Region and will make the regional industrial space globally competitive. Further the proposed MMLH facility will assist in kick starting investment in the identified location. Key benefits from the facility have been highlighted below:

- **Strategic location for consolidation of warehouses:** Post GST India is one large market without interstate taxes and charges on commodities. In the earlier scenario wherein last mile connectivity, warehouses have been designed based on respective state tax structures, inefficiencies in logistics value chain are high. The implementation of GST is expected to enable players to explore mechanisms of setting up large mother warehouse / regional distribution hub to manage their logistics. The location of these warehouses will largely be governed by demand centers, inbound costs, labour and other expenses. The aggregation of demand at regional level

will help achieve economies of scale and lower inventory cost. MMLH stands to benefit from it as it is located close to key demand centers of NCR region, western UP.

- **MMLH to improve efficiency in logistics:** Easy access / connectivity with DFC will help reduce transit time and effectively lower logistics cost. MMLH could act as a hub and tap into traffic generated on the two corridors. Creation of hub and spoken model of logistics will result in improved operational and cost benefits. Demand aggregation to incentivize players to invest in technology sophistication for higher efficiency. Players can plan well in advance and invest in achieving scale which will help them lower cost and increase lot sizes. Furthermore, 3PL service providers can focus on scale, technology and customize services as per customers' requirement.
- **Employment generation:** The proposed investments at MMLH and the regions around are large scale worker-oriented facilities expected to generate significant employment from various operations. This in turn will have a multiplier effect on the economy and will also generate significant cash flow for the government in terms of direct and indirect taxes.
- **Attract potential players to kick start investment:** the overall development of MMLH and supporting infrastructure is focused on addressing the key pain areas from logistics and supply chain perspective right from cost to efficiency in delivery mechanisms. With these points catered to, players have a huge incentive to look at potential investment in the region from a long-term perspective. By supplementing the industries in the region through the provision of a logistics facility nearby, MMLH will positively impact on the growth of these industries that shall have a multiplier effect on the economy of the region.

1.2.3 Proposed MMLH at Dadri (Greater Noida) - Site & Context overview

The development of the DMIC is strongly linked to the Ministry of Railways' long-term plan to construct a dedicated freight corridor with a high capacity, high speed, and dedicated railway line for freight. The development of the "MMLH" at Greater Noida near Dadri and near to the proposed DNGIR site has been planned to serve the freight movement to and from the industries in the NCR and Uttar Pradesh along with the industrial region in DNGIR. The objective of developing this facility is detailed below:

- **To improve efficiency of operations of existing industries** in the region as well as to improve the attractiveness of the region as an investment destination for various categories of industries and warehousing and logistics operators.
- **To tap the potential traffic along both Western and Eastern Dedicated Freight Corridors** that are bound to revolutionize rail-based freight movement with hi-end operational features of faster dedicated and high- capacity freight trains. The MMLH targets to serve as a world-class nodal facility that provides for efficient storage/transitioning of goods to/from DFC, thereby catering to the escalated freight traffic envisaged to be generated by DFC.
- To offer **a one-stop destination to freight companies and customers.** The facility will go beyond just standard container handling activities and will also provide various value-added services.

The proposed MMLH will serve as a dry port having facilities for not just storage, aggregation and export/import of industrial freight in the region but also value-added services such as banking, insurance, shipping, fashion logistics, simple assembly etc. and other activities related to finishing of goods within the facility alongside commercial space to host freight companies within the campus.

1.2.3.1 Location of Proposed MMLH

The proposed MMLH site is in Greater Noida in the Dadri block of Gautam Buddha Nagar district of Uttar Pradesh and is adjacent to the existing Delhi- Howrah Broad Gauge line in the southwest and old NH-91 in the North-west. Gautam Buddha Nagar is one of the most industrialized districts in Uttar Pradesh registering 51.5% growth in the past decade. It also has a significantly higher per capita income in comparison to other districts of Uttar Pradesh. Gautam Buddha Nagar district includes Bilaspur, Dankaur, Greater Noida, Jahangirpur, Jewar, Kakod, Noida, Rabupura, and Salarpur Khadar with Greater Noida being the district administrative headquarters.

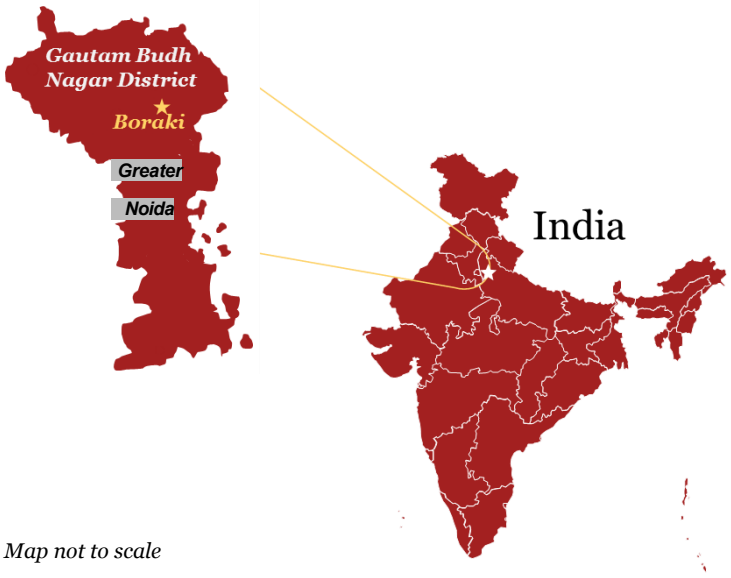


Figure 1-8 Location of Proposed MMTH

Greater Noida was planned as an extension to Noida with an idea to create a world-class city with excellent infrastructure facilities. The National Capital Region (NCR) Plan, 2021 identifies Greater Noida as one of the metro centers to be developed as a powerful growth node to attract capital functions and activities and suggests a very high level of physical, social, and economic development including efficient inter-urban transportation systems.

The key advantage of this MMLH lies in its location. The site for this MMLH is strategically positioned close to the congruence point of Eastern and Western DFC to tap the potential traffic along the DFC corridor and improve efficiency of operations of existing and proposed industries in the region. The site identified for the MMLH lies within the planning boundaries of the city of Greater Noida and its extension. The area indicated above is for the MMLH plot of 323.05 Ha along with area of ~25.4 Ha for a railway flyover as the approach track to the MMLH site. As a result, the overall land area considered for the facility works out to 348.45 Ha. This includes additional Land area of 12 Ha which is proposed to be developed for track infrastructure to accommodate long haul trains.

1.2.3.2 Connectivity of the Proposed MMLH

Road Connectivity

Greater Noida is well connected with all the neighbouring areas of Noida, Dadri, Ghaziabad, Yamuna Expressway Industrial Development area, Sikandrabad, Delhi and the rest of the NCR. The following are the main highways/ expressways which connect the MMLH with these areas.

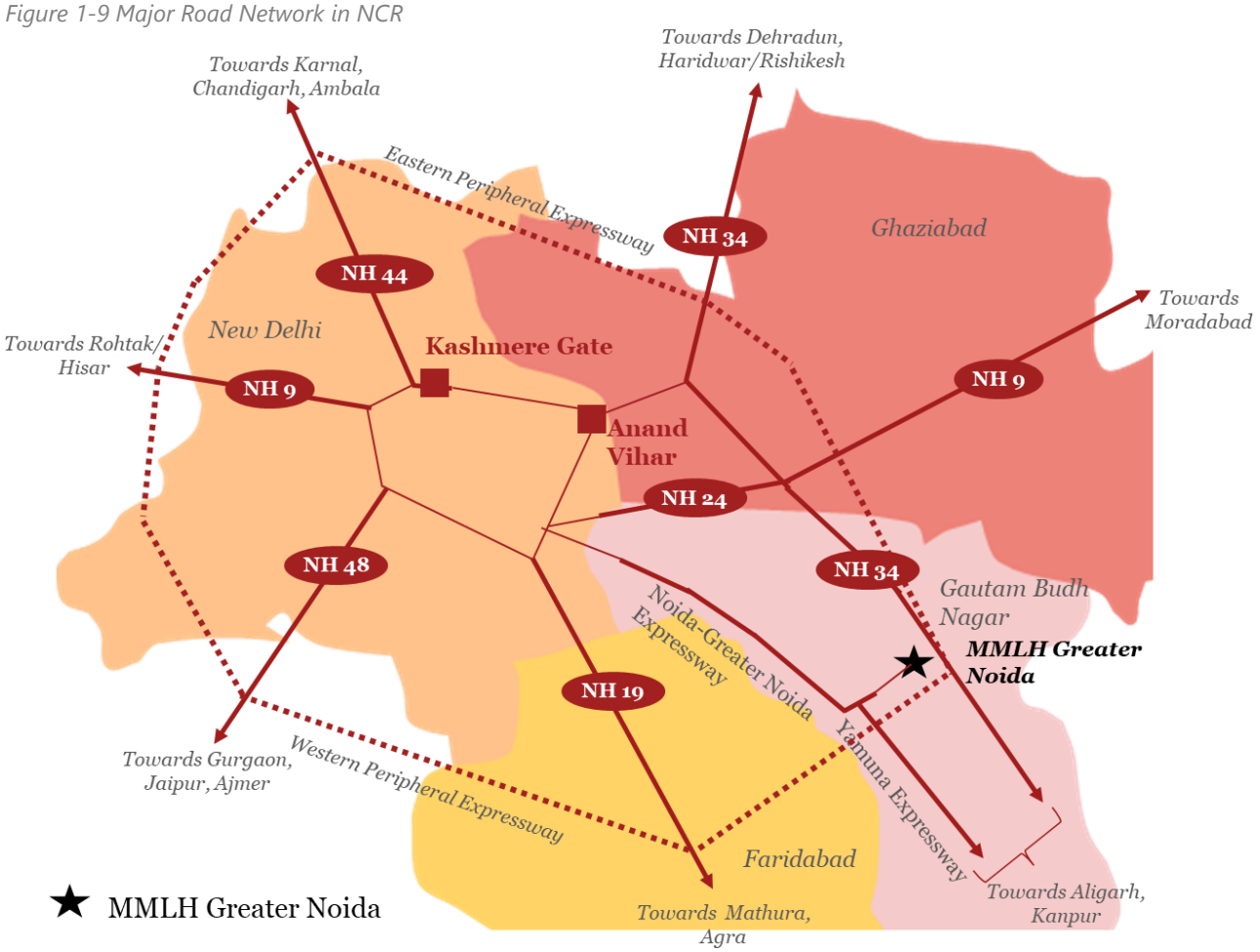
- National Highway-34 connects major towns like Bulandshahr, Aligarh, Ghaziabad, Meerut, etc. with Greater Noida. The MMLH plot is adjacent to NH-34, connected via old NH 91.
- Noida – Greater Noida expressway, a six-lane highway, connects twin cities of Gautam Buddh Nagar i.e. Noida and Greater Noida. The expressway is at ~9 km from MMLH site.
- Yamuna expressway, a six-lane highway, connects Greater Noida with Agra and passes through Jewar. The expressway is at ~10 km from MMLH site.
- The Eastern Peripheral Expressway (EPE), starting at Kundli on NH-1 and terminating at Palwal on NH- 2, intersect NH - 34 around Beel Akbarpur. This intersection point is at ~5 km from MMLH site. MMLH site is likely to have positive impact on its connectivity with Palwal and Kundli.
- Apart from the highway connectivity, the internal roads in Greater Noida are well developed making it easily accessible from various locations in Greater Noida.

The upcoming Faridabad-Noida-Ghaziabad (FNG) highway, part of EPE is planned to be around 56 km long with 20 km in Noida-Greater Noida region, around 8 km in Ghaziabad while the remaining is in the Faridabad region. The six-lane FNG highway will connect NH-9 with NH-2 via Faridabad, Ghaziabad and Noida. Once operational, this highway is expected to increase the regional road connectivity of the NCR and thus have a positive impact on Greater Noida region.

The MMLH plot is adjacent to the proposed MMTH on one side and on another side (Northwest) is adjacent to old NH-91 and thus road entry to the MMLH is planned from old NH-91.

Overall, it can be observed that the proposed site for MMLH is well connected, internally within Greater Noida via city roads and with the neighbouring areas via highways and expressways.

Figure 1-9 Major Road Network in NCR



Note: Map is not to scale

1.2.3.3 Railway Connectivity

Greater Noida enjoys a strategic location in terms of railway connectivity as the Delhi-Howrah main railway line passes through the city and which runs between the North and East of India. The MMLH plot is near the existing Railway Halt station at Boraki, where MMTH is proposed. Boraki station serves only suburban trains which mainly cater to daily passengers and non-suburban trains pass through the station without a halt. The east bound traffic from the NCR travelling on the Delhi-Howrah main railway line passes through Boraki station. Presently, Delhi- Howrah rail line runs at high utilization levels and sections of the line are being expanded to ease the congestion. Further, the proposed MMLH will be directly connected with the Eastern DFC and the Western DFC line at New Dadri. The schematic drawing shows the railway connectivity to the MMLH.

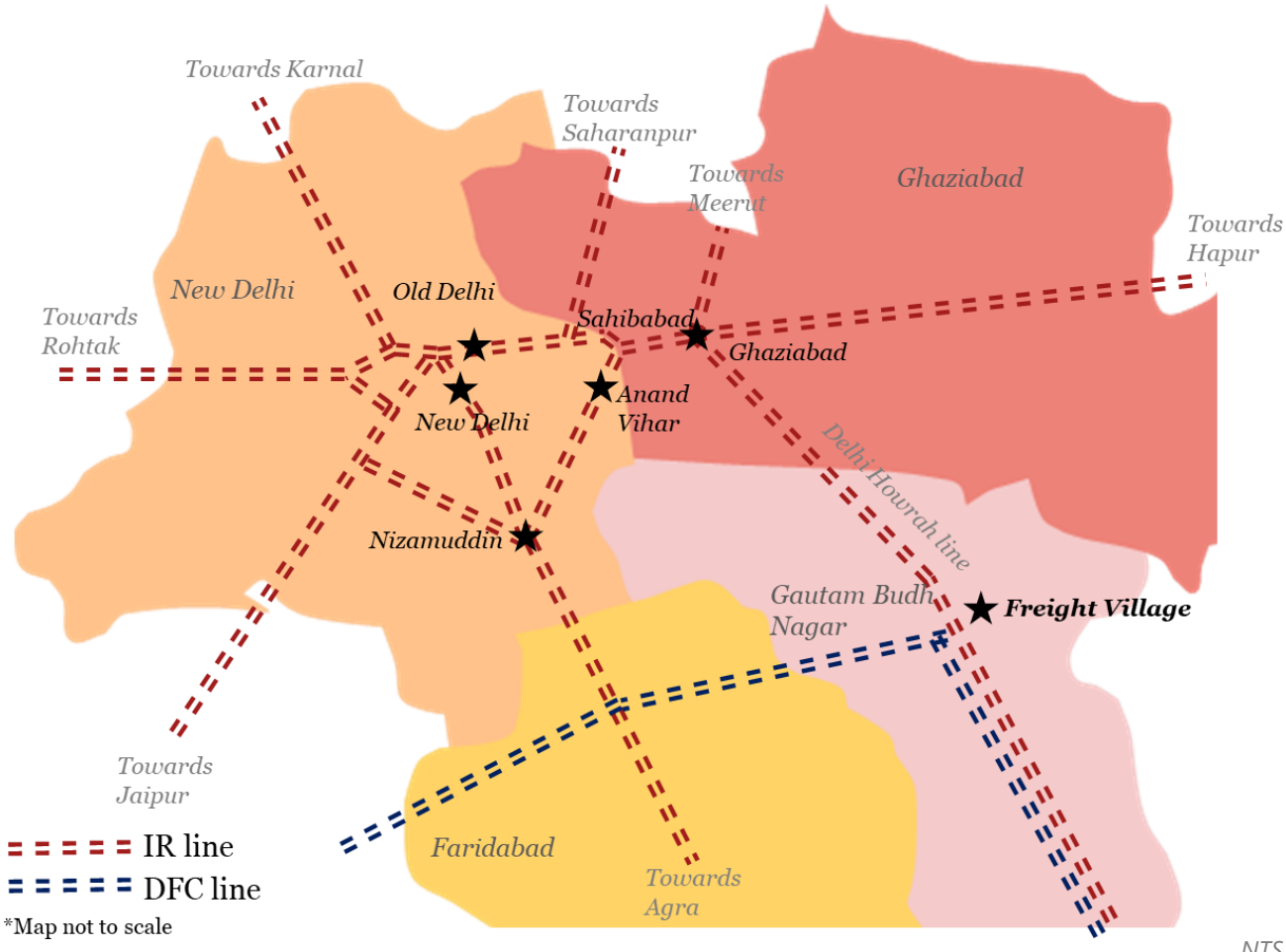


Figure 1-10 Railway Connectivity of MMLH

1.3 Benchmarking & market assessment

Freight logistics challenges and inefficiencies in India have placed the nation behind many of the economies and it raises concerns on the state of preparedness of the country to provide the desired enabling environment to serve an economy which is expected to grow at the rate of over 7% in the near term (Year 2017). Currently the logistics network in the nation is mired with several challenges including inadequate infrastructure, supply chain procedural bottlenecks and delays in implementation of reforms. India was ranked 44 in Logistics Performance Index and of the various parameters, the score of quality of transport infrastructure and efficiency of custom clearances are two major factors impeding the logistics industry of the nation

MMLH is one of the solutions under implementation by the Government of India to eliminate logistics and transport related bottlenecks in the country. As per the draft policy document on Multi Modal Logistics Park, the facility is characterized as a freight handling facility with a minimum area of 100 acres and comprising of mechanized warehouses, specialized storage solutions and mechanized handling & intermodal transfer container/bulk/break- bulk cargo terminals. Additionally, the facility is also expected to provide various Value-Added Services (VAS).

Across the globe several such facilities have not only been successfully implemented but have also been the drivers of economic development and growth in the region. Some of the key multi modal cargo handling facilities across the globe that have been instrumental in economic paradigm shift include: Jafza Free trade zone (UAE), Alliance terminal (USA), Xiamen Logistics Park (China), Interporto Bologno (Italy) and Busan logistics Park (South Korea)

A detailed assessment of key facilities present at each of these international cargo handling facilities has been carried out. The analysis has been focused on comparison of Logistics facilities and value-added Services – aimed at arriving at key infrastructure and service provisions that can be provided at the MMLH proposed at Greater Noida/ Dadri.

Below is an illustrative example of Interporto Bologna, Italy, which is one of the largest intermodal facilities in Europe

Table 1-1 Key Features of the facility: Interporto Bologna

Logistics Facilities	
Port connectivity and Container handling	Facility is well connected to port of Antwerp via Rail and has facilities to handle different types of cargo. Currently the facility is spread over the area of ~230 Hectares with additional land bank of 200 Ha Identified for expansion
Bulk handling, Storage and Warehousing	
Rail Connectivity	Dry port facility has good railway connectivity, with 15 railway tracks
Road Connectivity	Well connected to Bologna-Padova toll road
Value Added Services	
3PL	Various Multinational and domestic 3PL service providers have presence at the facility

Intermodal connectivity	Bologna is a leading intermodal facility for rail-road logistics and handling of cargo
Packaging and Labelling	Limited VAS services in terms of sorting and assembling services are available
Public Services	Office space leasing and real estate development is also promoted at Bologna facility
Key features	Interporto Bologna is a facility that has similar land area/size to the MMLH being planned at Greater Noida

Table 1-2 Land Area allocation at Interporto, Bologna

	Area (Ha)	% share	Remarks
Storage	67	29%	**Apart from basic infrastructure facilities for handling cargo, (Yard, terminal, roads etc.). Bologna terminal has more than 50% space earmarked for storage and other facilities**
Other Facilities	53	23%	
Yard/Siding	47	20%	
Terminal	32	14%	
Roads	22	9%	
Buildings/office	10	4%	
Total Area	**231**		

In India all the major cargo handling facilities (ICD/PFT) have been designed only to handle cargo. In terms of value-added services, majority of the facilities provide custom clearances and storage; however limited capacity, lack of expansion and other concerns related to congestion prevail. Key existing inland logistics terminals in the country have limited provision of additional facilities like retail centric warehouses and value-added service provisions such as packaging, labelling, sorting, etc. which are major drivers of traffic at these large international facilities

Many of the value-added services such as cold storage, and efficient warehousing are either operated independently by private companies or fragmented across the country, which limits the overall scalability of these services, dispersion of cargo and overall inefficiency due to limited economy of operations. Keeping in mind the scalability of operations, efficient cargo evacuation and value-added services, following facilities are proposed at the MMLH:

- Dedicated facility for handling Container and Bulk/Break bulk cargo
- Packaging, labelling
- Third party logistics (within the facility)
- Large truck parking area and Intermodal terminal
- Cold storage facility
- Office space

To recommend facility provision at the MMLH, Greater Noida, the following key aspects have been considered:

- Benchmarking with international facilities
- Commodity-wise cargo profiling of hinterland
- Identification of key industrial clusters
- Limitations and inefficiencies at existing terminals

These facilities would be further supported by growing economic activity in the region, industrial setup of DNGIR, infrastructure improvement and improved connectivity (Eastern peripheral expressway, DFC etc.).

Table 1-3 Benchmarking of Key Facilities provided at MMLHs globally

		Jafza - Jebel Ali	Alliance Logistics Hub	Xiamen Logistics Park	Busan Logistics	Interporto Bologna	MMLH, Greater Noida
	Container Handling	✓	✓	✓	✓	✓	✓
	Container Yards	✓	✓	✓	✓	✓	✓
	Warehousing	✓		✓	✓	✓	✓
	Packaging & Labelling	✓		✓	✓		✓
Logistics Facilities	Air Cargo Services		✓	✓	✓		
	Aviation Services*		✓	✓	✓		
	Rail Linked Facilities		✓	✓	✓	✓	✓
	Third Party Logistics Services	✓	✓	✓	✓	✓	✓
	Intermodal Terminal		✓	✓	✓	✓	✓
	Bulk Cargo Handling	✓	✓		✓	✓	✓
	Bulk Storage (agri, cement, iron, etc.)				✓		✓
	Cold Storage	✓			✓		✓
Public Services	Office Space, Residential, Hotels, Education, Traders Market, Recreational	✓+	✓+		✓+	✓+	✓+
License Category	Licensing Services	✓					

Specific Area Allocation	*Industrial Setup*	✓		✓	✓		✓
***Different types of public service facilities are present at each of the terminals**							

1.4 Demand and traffic overview

The MMLH is expected to be a major cargo handling, storage and freight facilitation center in North India. Considering the potential of the variety of cargo that the MMLH can handle, traffic estimation for the MMLH has been carried out under three broad categories: Container Cargo, Bulk cargo and Warehousing potential. In addition, development of commercial areas has been envisaged for the provision of office space and other amenities in the MMLH.

1.4.1 Container cargo

The MMLH is expected to handle 0.74 million TEUs in 5th Year of operations with major share of EXIM container cargo. This traffic is expected to increase to 1.44 million TEUs in 15 years' time– which would be the ultimate planned capacity of the facility.

Table 1-4 : Estimated traffic for container cargo (Million TEUs)

Type	Year 5	Year 10	Year 15
Total	0.74	1.12	**1.44**
EXIM	0.73	1.10	**1.41**
Domestic	**0.01**	**0.02**	**0.03**

1.4.2 Bulk cargo

The bulk cargo assessment for the MMLH considers two major commodities – Cement and Iron & steel. The MMLH is expected to handle 6.6 MTPA in fifth year of with major share of Iron & steel traffic expected from the Eastern region of India. The bulk traffic is expected to grow to 7.9 MTPA by the 15th year of operation.

Table 1-5 : Estimated traffic for Bulk Cargo (MTPA))

Type	Year 5	Year 10	Year 15
Cement	2.6	3.3	3.9
Iron/Steel**	4.0	4.0	4.0
Total	**6.6**	**7.3**	**7.9**

*** Traffic is constrained by the number of trains per day between the MMLH and EDFC*

Given the potential scale of rail and road operation that will be required from this MMLH, the traffic potential for container and bulk cargo has been kept constant post 15th year of operation and not grown further to ensure that planned infrastructure can handle this requisite level of traffic.

1.4.3 Warehousing potential and additional facilities

The MMLH is expected to cater to warehousing & cold storage demand of the region and offer certain additional facilities like packaging and labelling units. The MMLH is expected to provide a distinct advantage given their size, connectivity, and modern infrastructure.

Table 1-6 : Estimated required area for various facilities

In Mn. Sq. ft.	Year 5	Year 10	Year 15
Break Bulk (Cement and Iron & Steel) Warehouse	0.37	0.39	**0.42**
Bonded	0.55	0.78	**1.08**
Brick & Mortar (Consumption-led) warehousing	3.0	4.0	**5.5**
Other warehouses (Processing, stuffing & de-stuffing, Cold Storage)	1.17	1.46	**1.73**
Total	**5.1**	**6.6**	**8.7**

Additionally, development of ~2 million sq.ft. (built-up) of commercial area over the entire concession period has been estimated considering typical requirement of office space at similar international MMLH.

1.4.4 Projected Container Traffic

It is estimated that MMLH at Dadri in Greater Noida would receive and dispatch on an average of 1260 TEUs containers per day during the fifth year of operations, 1620 TEUs containers per day during the 10th year of operations, 1980 TEUs containers per day during the 15th year of operations. Thus, everyday MMLH would receive 7, 9 & 11 trains per day during the Years 5, 10 & 15 Years of MMLH Operations respectively.

Table 1-7 Projected Traffic at MMLH

S. No.	Phases	Projected traffic in TEUs	Type of Wagons	No of wagons by a train	Throughput Per train in TEUs	No of trains per day
1	Year 5	1260	BCL (Bogie Low Height for containers)	90	180	7

2	Year 10	1620	BCL (Bogie Low Height for containers)	90	180	9
3	Year 15	1980	BCL (Bogie Low Height for containers)	90	180	11

Accordingly, MMLH railway yard is designed to handle 11 heavy haul trains per day. MMLH consists of reception yard along with engine reversal facility, dealing yard, a shunting neck, a loco siding, train examination lines, sick wagon lines to meet with all the requirements of train operations connected with MMLH.

- Details of reception Yard: The reception yard is having 23 lines;18 Line CSR of 750 m per each line and 5 lines for 1500m long haul may be added at later stage to increase operational efficiency.
- Details of dealing yard: Total number of lines in dealing yard are 3 lines for Cement, 3 lines for Steel & 8 lines for container & bulk traffic with CSR of 750 m.
- Shunting neck with CSR of 750 m holding of capable of holding 1-unit train is provided at CH:5409.5 m towards New Dadri station.
- Train Examination/ Inspection lines:
    - 4 number of train Examination lines with CSR of 750 m is designed for examination of container rakes.

Inward train engine can be reversed through any one of the vacant reception lines. Thus, the above proposed yard in MMLH with all the required facilities can deal with the highest projected traffic.

1.5 Project Masterplan & Design

MMLH, in Dadri being developed by NICDC, is strategically located to receive goods from and dispatch trains to both Eastern and Western Dedicated freight corridor lines through DFCC yard at Dadri.

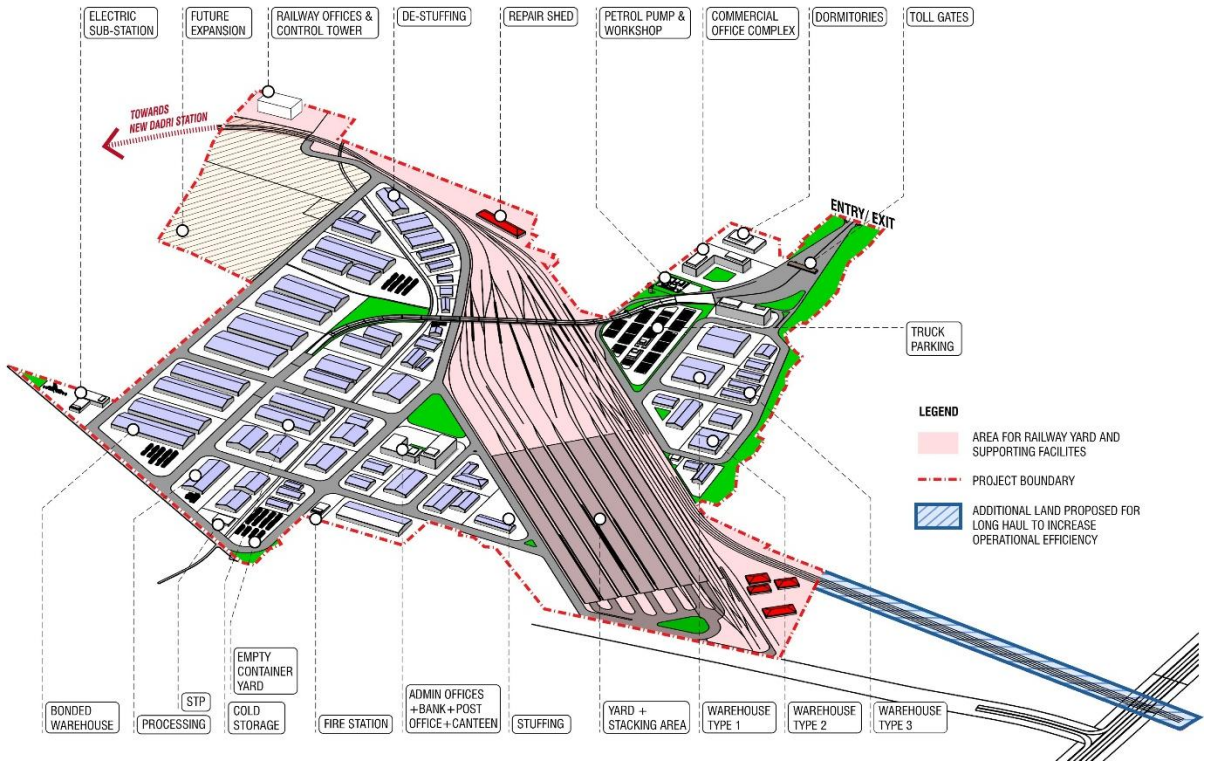


Figure 1-11 Proposed site for MMLH

1.5.1 Concept adopted in the planning of the MMLH

The objective of design for the MMLH would be to ensure efficient intermodal handling, faster turnaround on DFC and ability to utilize the scale of modern facilities for allied development of consumer driven and value-added warehousing. Taking into consideration analysis of existing/proposed connectivity, infrastructure at the selected MMLH site, the market surveys, the market demand assessment and the size & orientation of the available land area for the proposed MMLH at Dadri, the conceptual layout plan has been arrived at. An attempt in the design has been made to make a self-sustainable MMLH with all the required facilities. The logistics business generated due to the DFC would require multiple modes to handle the cargo. This is expected to generate huge employment; hence facilities for vehicles as well as employees need to be planned in one gated complex. This gated complex would be multi-modal planned to facilitate movement via various modes like railways, trailers, multi axle HCV (Heavy Commercial Vehicles), trucks, visitor cars and storage of logistics and allied facilities for the function of the same. Multi axle HCV is expected to have continuous movement and waiting in this area. In this MMLH, the railway siding is one of the

main functions and would require a minimum of 750 m length & space for ingress egress to railway loops. To ensure smooth functioning of the MMLH, the following facilities have been proposed:

1. Railway siding lines planned to handle the projected cargo. Railway siding also provides for trip examinations and maintenance of rolling stock.
2. Special provision for custom bonded area for export/import
3. Warehouses
    - Bonded Warehouses
    - Processing Units
    - Cold Storage
    - Brick & Mortar Warehouses
    - Bulk Warehouses
4. Gate complex with office to administer the entry and exit to the complex for all modal movement including visitors & employees.
5. Platforms & Roads
6. Weigh bridges at entry and exit.
7. Fuel stations to facilitate fuel demands of all types of vehicles.
8. Workshops – for container repairs and heavy vehicle repairs.
9. Parking lots for all types of heavy vehicles and visitors parking.
10. Restaurants/stalls for food & allied general needs.
11. Multi facility building with banks, ATMs, communication center, offices at upper level for logistics handling, contractors/agents/companies and area for other commercial activities. These have been arranged above the entry complex as well as beside the warehouse.
12. Toilets & dormitories for truck drivers and lodging hotels for businessmen
13. Electric substation for power supply
14. Water storage & distribution pump room etc.
15. Sewerage treatment plant & recycling system for treated water
16. Rest Rooms for railway staff/ workshop staff
17. First Response center for any emergency like fire or accident. Hence firefighting tenders and equipment, Primary health center

1.5.2 Container movement within MMLH

1.5.2.1 Outward Container (EXIM) movement

First step in the process is nomination of empty container at the admin complex at Building marked N/M in Master Plan. For the facility stuffed containers, the goods to be loaded come through trucks/ trains and get loaded into containers at the stuffing units (marked H). Some of the outgoing goods may require packaging, labelling etc., that process gets executed at units marked J. The custom clearance of the goods loaded within the facility is done at the stuffing units. After custom clearance the containers get loaded onto trains from the platforms.

For the factory stuffed containers, movement is through the 30 meters main road to the factory. The factory stuffed containers move straight to Loading platforms, where test check by custom departments gets done; main custom clearance is supposed to be completed at the factories where stuffing is done.

Figure 1-13 Facility stuffing traffic movement

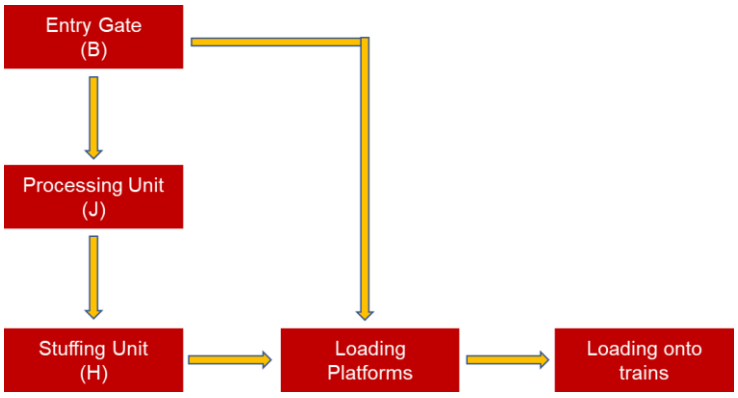
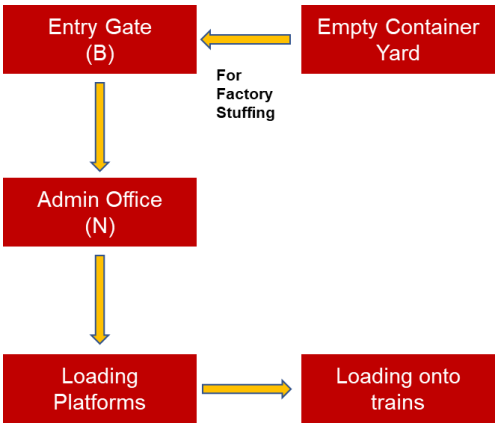


Figure 1-12 Factory Stuffing movement



1.5.2.2 Outward Container (domestic) movement

The domestic outward container traffic undergoes the steps mentioned above, except that custom clearance is not required.

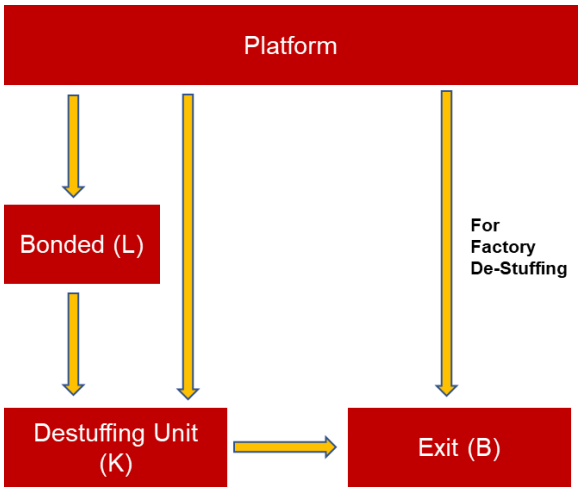
1.5.2.3 Inward Container (EXIM)

The inward containers coming to the MMLH through rail would get unloaded at the platforms. A large portion of these containers would be unloaded (de-stuffed) at external facilities. These containers would be checked by Customs officials at the platforms (CFS).

The containers getting unloaded (requiring destuffing) at the facility would move to de-stuffing units (K), where the goods moving out get custom cleared. Goods, for which custom clearance is not done, would move to bonded warehouses (L).

Custom cleared goods and goods for which custom clearance is done at factories would move via 30 m road to the gate complex and out of MMLH.

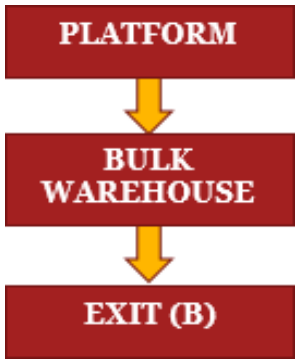
Figure 1-14 Traffic flow for inward traffic movement



1.5.3 Movement of bulk traffic

Cement and Iron & Steel traffic, in MMLH, are proposed to be dealt with in the Railside warehouses. These commodities unloaded from trains would be stored in Railside warehouses from where they can be moved out for consumption as per demand.

Figure 1-15 Bulk traffic movement



1.5.4 Warehousing

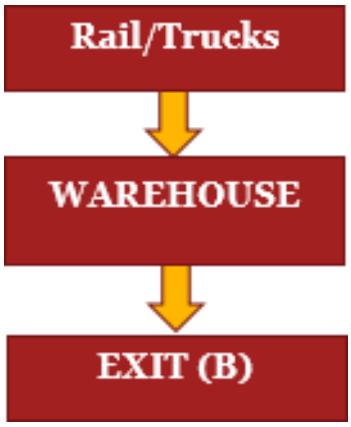
1.5.4.1 Exim traffic-based warehouse

The movement involved for Exim based warehouses viz., Bonded, Processing, Stuffing & De-stuffing. Besides these warehouses, cold storage is required for goods requiring refrigeration, so these warehouses are proposed to be clustered near the railyard to reduce internal movement.

1.5.4.2 Brick & mortar warehouses

These warehouses store e-commerce goods which may be received either through rail or road. The sizes of the packets involved are much smaller. The movement involving these warehouses is different from the ones involved with bulk goods or EXIM goods, road movement requirement of these goods is considered, and these warehouses are positioned away from rail yards in warehouse area. Circulation plan for the traffic designed to/ from these warehouses is shown in the figure below.

Figure 1-16 Goods movement for Brick & Mortar warehouses



1.6 Design and development of masterplan approach

A multi-pronged and inclusive approach for developing the concept master plan for the MMLH has been adopted. The MMLH being predominantly a transport facility, various engineering parameters for design of components such as rail siding and tracks, road curvatures have been dealt thoroughly. The master plan primarily focuses in achieving the following:

- Identification of a suitable take off point on the existing rail network or the DFC and the extent of railway and road infrastructure inside the MMLH
- Efficient activity distribution in terms of railway tracks for loading/unloading, covered warehousing, open storage of containers and goods, segregated space for special need cargo (hazardous, cold storage etc.), paved stacking areas, weighing scales, maintenance/inspection areas, etc.
- Structured and efficient road access and internal circulation for trucks and container handling equipment to all facilities. Single window clearance and seamless multi-modal transfers
- World class unloading and loading capabilities and high standards of service. Well equipped & spacious loading/unloading bays
- Adequate space provisions for warehouses and CFS facilities are not limited to storage and packaging activities but can host a series of additional services like inspection, consolidation, cross docking, spot stocking etc.
- Adequate provision for 'Value added services' such as banking, insurance, shipping, fashion logistics, simple assembly etc. and the ability to perform some manufacturing/assemble operations, shrink wrapping, bar coding, labelling and ticketing, palletization, fumigation etc.
- Tapping on the potential of the site and the land available to provide for commercial services to be housed within the facility along with small enterprises
- Provision for well-organized truck parking and driver amenities within campus.

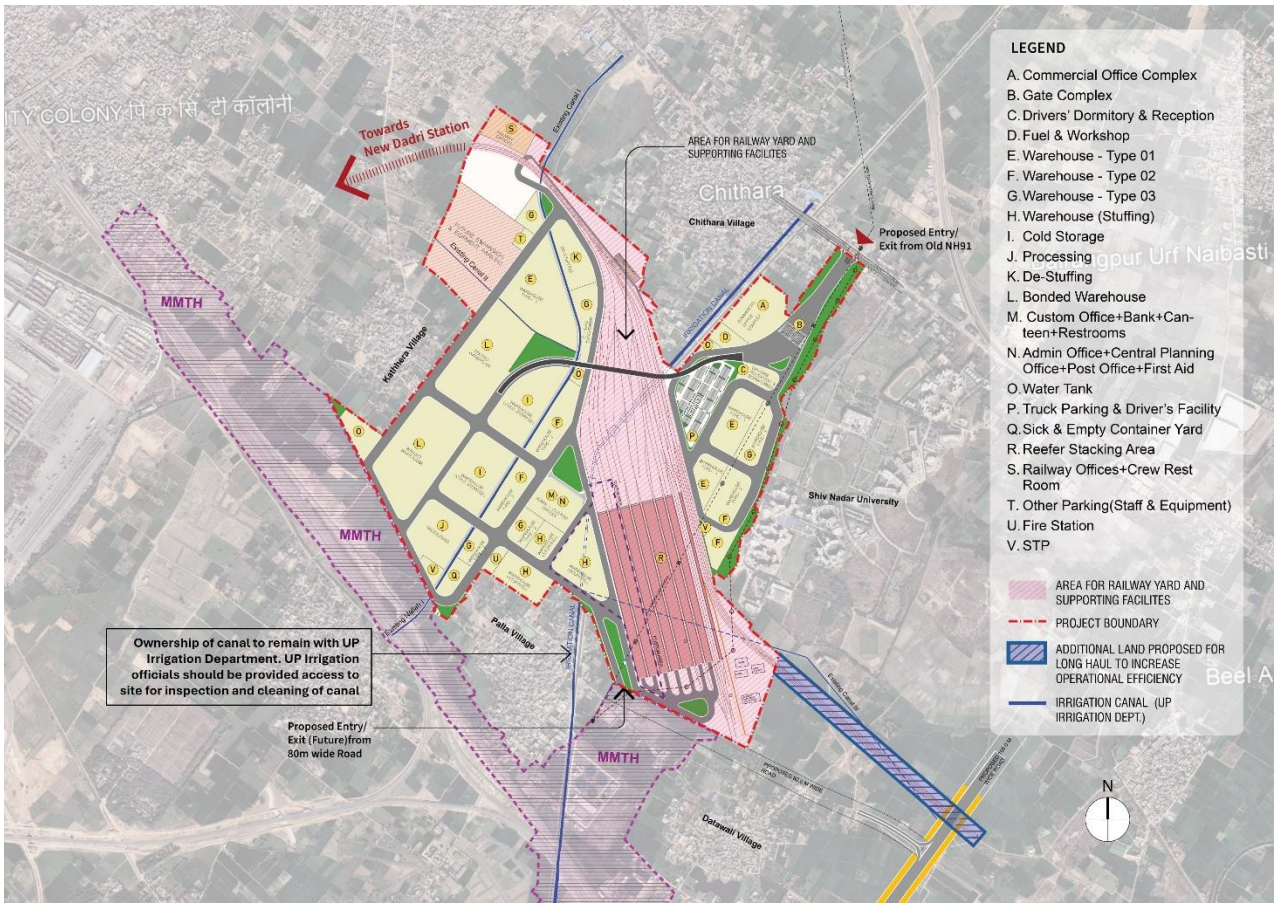
- Boarding/lodging/entertainment facilities for drivers and technicians. Provisions for fuel stations, repair and workshop facilities, etc.
- Uninterrupted power and backup facility and abundant water supply (natural and drinking) and ready to use IT, ITES, Internet enabled services, high security, fireproofing, CCTV
- Functional segregation of areas based upon use, i.e. EXIM, domestic, and common amenities/facilities, warehousing, customs zone, and commercial zone.

1.6.1 Zoning

The entire master plan has been conceptualized to create distinct yet connected zones. Freight zones (loading/unloading from trains) have been planned on the south-west part of the site, leaving a clean chunk of land on both the east & west side for warehousing and other facilities. The zone under the HT line that cut across the site has been planned as a green area lined by warehouses. Bonded warehouses have been planned on the west side of the site, thus segregating themselves with a controlled entry from the rest of the development. Customs Offices & Administrative offices have been located centrally to enable easy access from all zones. A central park near the administrative area has been proposed to create a green and inclusive environment. Commercial zones have been planned with segregated access from outside road, thus avoiding congestion within the precinct. A road has been proposed along the existing Canal-1 that would facilitate its regular cleaning & maintenance. Utilities such as water tanks, STP and substations have been planned in accordance with the site 's overall slope and at locations which are quite segregated from the rest of the facilities.

The Long Haul of the rail yard has been proposed to be developed at a later stage. This Long-Haul is required for the operational efficiency and accommodating long haul train only and is not expected to increase the revenue of the logistic hub.

Figure 1-17 MMLH - Masterplan



The railway yard has been sub divided into EXIM yard and domestic yard. EXIM yard deals with levels dedicated to import & exports, domestic yard deals with non-EXIM rail traffic & logistic zone providing outward traffic train examination, maintenance & backup yard to take-up for difference incoming in & outgoing rakes.

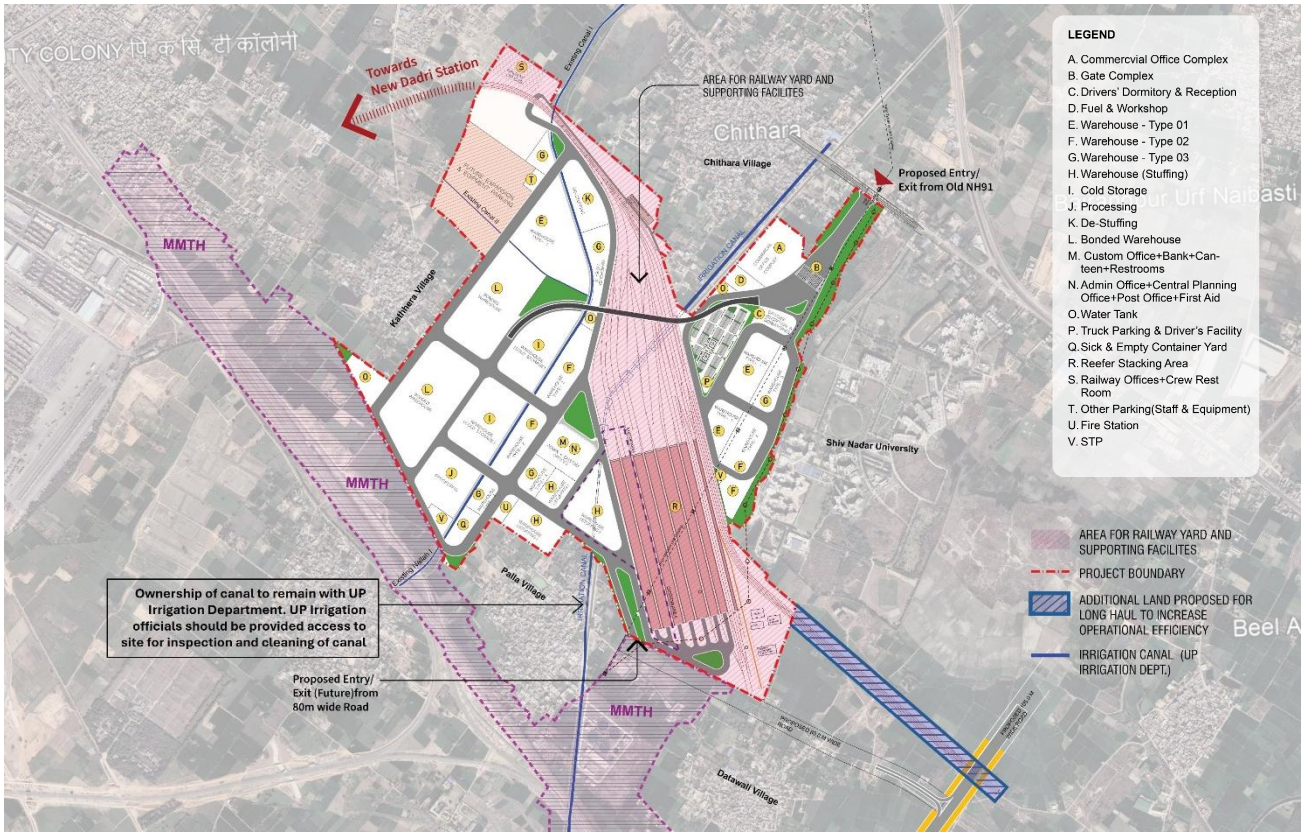
1.6.1.1 Salient features of the masterplan

- Different type of structures covered in above Master plan are labelled from A to V
- Commercial office complex buildings are labelled A.
- Gate Complex is labelled B; it houses toll gates and weighbridges.
- Drivers' dormitories are labelled C
- Fuel and Workshop unit is labelled D
- Brick & Mortar Warehouses Type I, 5 in no total built-up area 2,22,556 square meter labelled E
- Brick & Mortar Warehouses Type II, 7 in no total built-up area 1,83,291 square meters labelled F
- Brick & Mortar Warehouses Type III, 14 in no total built-up area 1,34,848 square meters labelled G
- Stuffing Warehouses 5 in no with total built-up area 27,482 square meters labelled H

- Cold storage 4 in no with total built-up area 65,871 square meters labelled I
- Processing units 2 in no with total built-up area 21,171 square meters labelled J
- De-stuffing unit 2 in no with total built-up area 17,710 square meters labelled K
- Bonded Warehouses 4 in no with total built-up area 1,00,000 square meters labelled L
- The Administration Office, Central Planning Office, Post Office and Custom Offices have been proposed along with supporting spaces such as First Aid Center, Bank, Canteen & Rest room with total built up area 28,724 square meters labelled M & N respectively.
- Electric Substation and Water Tank (overhead and underground) Labelled O
- Truck Parking with driver's facilities have a combined built-up area 14,250 square meters labelled P
- Empty & sick containers labelled Q, space for reefers in area labelled R, railway offices labelled S, equipment parking and other parking labelled T, fire station labelled U
- WTP/ STP are labelled V.
- Steel and cement warehouses are included in MMLH yard

MMLH yards, open platforms, steel and cement warehouses are in logistic zones, connected via various access roads

Figure 1-18 MMLH - Masterplan



1.6.2 Design of MMLH Yard

The geographical and other features available at site have been taken into consideration in the design of MMLH layout. The MMLH rail yard has been designed based on accepted norms and an adjustment factor has been applied to take into consideration non-uniform train movement through the day. The design of the MMLH yard has been done in coordination with DFCCIL. Adequate provision for supporting warehouses and other allied infrastructure, custom facilities, facilities for service providers etc. has been made in the MMLH, making it a world- class facility.

Connection of MMLH with DFC Yard at Dadri

- Whereas WDFC is directly connected to MMLH through the approach spur line, EDFC gets connected through the interchange lines at Dadri.
- The movement would be through Block movement on Absolute Block system.
- The spur line has been designed as per the SOD (Standard Schedule of Dimensions) for Dedicated Freight Corridors (Western) for gradients, curve etc.
- The spur line from Dadri to freight corridor crosses the IR and DFC lines, at chainage 3174. A Rail over Rail (ROR) bridge has been proposed at this location.

1.6.2.1 Land use for MMLH

Of the 311.05 Ha of MMLH plot, the core area of the MMLH comprising of yards, warehouses for containers, bulk etc. has been planned to constitute ~63% of the total area. Other major areas comprising of truck parking and roads would constitute around 19% of the total area.

In addition to the main MMLH plot, around 25.4 Ha of additional land would be utilized for development of the rail flyover as an approach from the DFC yard at Dadri.

Table 1-8 : Estimated required area for various facilities

MMLH Component	Area in Ha	Percentage	Remarks
	Revised Master Plan		
Area for ESP (Rolling Stock, Loading / Unloading Platforms & Railway Administrative Areas, Utility, Maintenance & Storage Areas	92.6	29.77%	MMLH yard excluding future development area of 12 Ha reserved for Long-Haul to increase efficiency.
Area for Warehousing Plots	90.42	29.06%	Warehouse infrastructure shall be developed by the private concessionaire

Ancillary Commercial Facilities	4.37	1.40%	As Required (Bank, Fuel Station, truck workshop, fires station, dormitories for drivers, etc.)
Truck Parking & Internal Roads	57.28	18.41%	Additional parking is available near warehouses etc.
Administrative & Commercial Facilities	8.81	2.83%	Commercial building is proposed as multi-storied. Also includes Customs office, Police station, First aid, post office etc.
Other Open Area	32.56	10.42%	Can be used for future expansion except area below HT Wires. Includes canal area also.
Green Area	25.01	8.04%	
Total MMLH Area (A)	**311.05**	**100.00%**	Area excluding future addition of long haul
Approach Track Area (B)	25.4	-	Not inside MMLH Boundary
Total Area (A+B)	**336.45**		

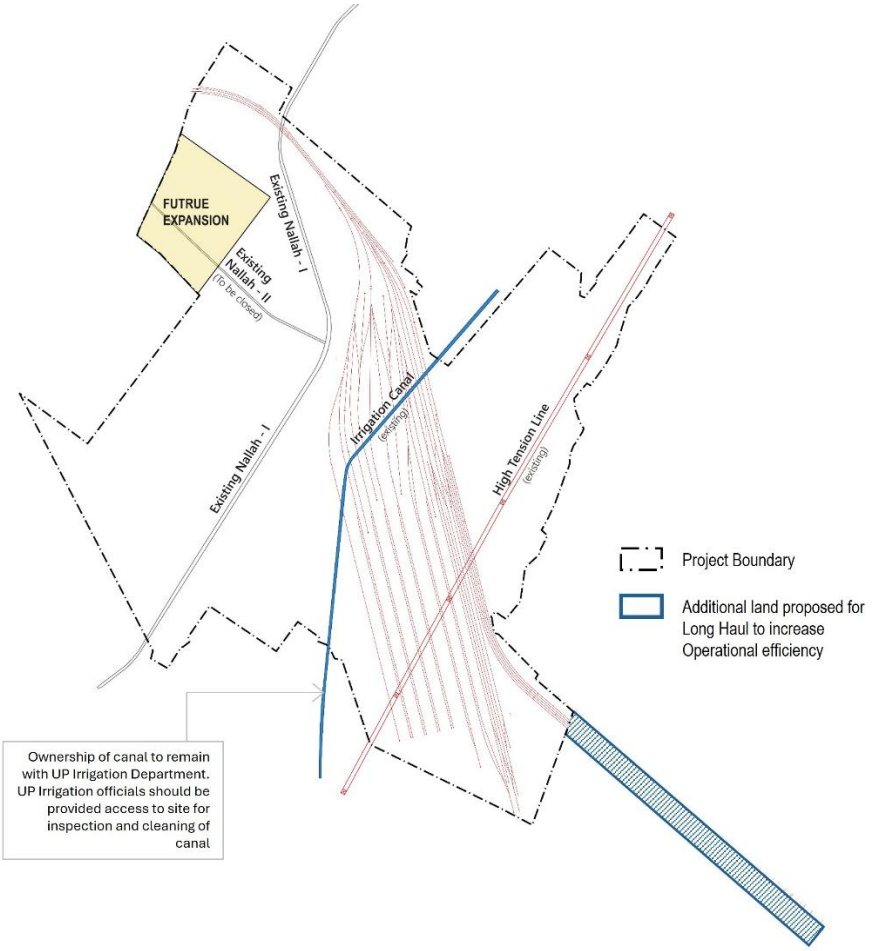
Table 1-9 MMLH Facilities Area Statement

Sno	Building Name	Building Use & Function	Land Area (Sq.m.)	Built-up Area (Sqm)	FAR Achieved
			Revised Master Plan		
1	A	Commercial Office Complex	52,330	1,92,109	3.67
2	B	Gate Complex	8,359	8,920	1.00
3	C	Drivers' Dormitory & Reception	13,815	12,272	0.89
4	D	Fuel & Workshop	10,873	2,867	0.26
5	E	Brick & Mortar Warehouse (Type 1- Footprint = 5,00,000 Sq. ft.)	1,45,313	2,22,556	1.53
6	F	Brick & Mortar Warehouse (Type 2- Footprint = 1,00,000 Sq. ft.)	1,14,305	1,83,291	1.60
6	G	Brick & Mortar Warehouse (Type 3- Footprint = 33,333 Sq. ft.)	87,850	1,34,848	1.53
7	H	Warehouse (with Stuffing facility)	95,595	27,482	0.29

Sno	Building Name	Building Use & Function	Land Area (Sq.m.)	Built-up Area (Sqm)	FAR Achieved
			Revised Master Plan		
8	I	Cold Storage Warehouse	1,29,891	65,032	0.50
9	J	Processing	51,068	21,171	0.41
10	K	De-Stuffing	34,003	17,710	0.52
11	L	Bonded Warehouse	2,26,177	1,00,000	0.44
12	M	Custom Office + Bank +Canteen + Restrooms	35,104	28,724	0.82
13	N	Admin Office + Central Planning Office + post office + First Aid			
14	O	Water Tank/ Ground & Overhead	2,263	1,897	0.07
		Electrical Sub Station	25,313		
15	P	Truck parking & Drivers' Facilities	53,182	14,250	0.27
16	Q	Sick & Empty Container Yard	12,586	14,250	1.13
17	R	Reefer Stacking Area	29,353	29,353	1.00
18	S	Railway Offices - Control Tower	500	520	1.04
19		Railway Offices - TXR Office + Crew Rest Room	25,761	5,000	0.19
20	T	Other Parking (Staff & Equipment)	4,685	4,685	1.00
21	U	Fire Station	6,438	1,534	0.24
22	V	STP	7,907	7800.073	0.99

1.6.3 Future Expansion

Figure 1-19 Future expansion of MMLH



In the master plan, provision for future expansion and the corresponding space requirement has been considered. In the current facility all the land which could be easily used has been considered and provided for current use and some land as described below is only available for future expansion.

About 14.89 ha of unutilized land has been left for future expansion on the west side of the logistics zone. This could be used by provision of a special access arrangement for which future provision for connecting the underpass has been planned under the tracks to enable the use of land in future.

At a later stage, the Long Haul of the rail yard shall be developed which will increase the overall efficiency of the rail yard by accommodating long haul trains. This addition is not expected to increase the revenue of the logistic hub.

1.7 Project structuring and financial & economic feasibility

The project is proposed to be executed in two stages:

Stage – 1:

Government of Uttar Pradesh and NICDIT (erstwhile DMIC Trust) have incorporated a 'Special Purpose Vehicle' (SPV) in the name of DMIC Integrated Industrial Township Greater Noida Limited

(DMIC IITGNL), for implementation of the project. The State Govt. will provide land to the project SPV as its share of equity and matching equity will be released by Govt. of India for funding of trunk infrastructure. An EPC Contractor will be engaged by the SPV for implementation of various trunk infrastructure components. In case of a specific project component like sewage treatment plant, separate EPC contractors may also be appointed.

Stage – 2:

Engagement of a master private developer by the 'SPV' to execute the project on PPP basis. The Stage- 2 is proposed to be executed as a 'Design, Build, Finance, Operate, and Transfer (DBFOT)' contract with a concession period of 45 (Forty-Five) years.

Based on qualitative assessment for revenue sharing mechanism, the following structure has been arrived for the revenue sharing between concessionaire and SPV for development of MMLH:

- The private developer(s) will be required to pay a certain percentage of total revenue (variable fee) from all components of MMLH operation (gross revenue) as revenue share on a quarterly/annual basis.

The MMLP is proposed to be executed in 3 phases as follows:

- First phase of construction to handle traffic up to fifth year of operations.
- The second phase of construction is to handle traffic up to tenth year of operations.
- The third phase of construction is to handle traffic up to fifteenth year of operations.

1.8 Estimated Project Cost

The SPV is expected to incur capital cost **INR 2,464 Crore** (escalated cost) towards land and trunk infrastructure including land acquisition, external rail connectivity, railway siding, utilities such as water, power till the boundary of the project etc. over the concession period. The private developer is expected to incur capital cost of **INR 5,881 Crore** (escalated cost) towards development of container yards, warehouses, parking, gate complex and related logistics infrastructure and equipment over the entire concession period. The table below summarizes capital expenditure (escalated costs) by SPV and private developer:

Table 1-10 : Capital Expenditure by SPV and Private Developer (escalated cost in INR Cr.)

S No.	Item of work	Total cost (Rs crore)	Phase I	Phase II	Phase III
1	Project cost - SPV	**2,464.00**	2,464.00	-	-
2	Project cost - Private Developer	**5,881.00**	2,373.00	1,414.00	2,094.00
	Total Project cost (SPV+ Private)	**8,345.00**	**2,373.00**	**1,413.00**	**2,094.00**

The overall cost of MMLH development is estimated at INR 8,345 crores over the concession period.

1.8.1 Cost For SPV (Complete Cost To be Borne by SPV in Phase I)

Table 1-11 Cost For SPV

S No	Item of Work	Cost Cr Rs
Sno	Item of Work	Total cost (INR Cr)
1	Land	1343.95
2	Land development (Levelling)	3.40
3	Railway infrastructure External	416.00
4	Railway Infrastructure Internal	579.00
5	Utility Shifting (Shifting HT & LT lines, Dismantling of existing structure)	77.00
6	Power Supply (external connectivity to the nearest grid)	7.00
7	Boundary Wall/ fencing	16.00
8	General Consultancy 3%	11.00
9	Contingency 1% of total cost excluding land cost	11.09
	Total SPV Cost	2,464.45
	Say	**2,464**

1.8.2 Capital expense to be borne by Private developer (with escalated cost 5%)

Table 1-12 Capital expense to be borne by Private Developer

Sno	Item of Work	Total cost (INR Cr)	Phase I	Phase II	Phase III
1	Land development (Levelling)	72.62	72.62	0.00	0.00
2	Roads and Signage including ROB to be constructed in Phase one	349.99	253.15	42.54	54.30
3	Utility Buildings (Custom office, Bank, Canteen, Rest Room, Admin Office, Central Planning office, Post Office, Driver Facilities, Fire Station)	125.92	125.92	0.00	0.00
4	Paved area, landscaping	138.26	53.96	28.93	55.37
5	Equipment costs	465.33	141.53	142.25	181.55

Sno	Item of Work	Total cost (INR Cr)	Phase I	Phase II	Phase III
6	Warehouses	2,623.78	859.71	669.82	1,094.25
7	Solid Waste Management (storage bins/ collections and transportation)	12.40	4.98	4.02	3.40
8	Sewage Treatment Plant	39.34	39.34	0.00	0.00
9	Canal Bridge	39.52	39.52	0.00	0.00
10	Sewerage network, Water supply network, Strom water drain, street lighting	127.71	127.71	0.00	0.00
11	Others (Internal power network, Fuel station, Inspection canopy, Firefighting spray arrangement, Axel Counting System, Refer Charging System, CCTV and Control Room)	97.44	97.44	0.00	0.00
12	General consultancy, project management & supervision consultancy services (3% of civil cost),	1,061.16	261.99	351.08	448.09
13	Commercial area	154.60	62.34	37.16	55.11
14	Contingency @ 1% of total cost excluding land cost (Private Developer)	53.08	21.40	12.76	18.92
15	Sub Total	5,361.15	2,161.61	1,288.55	1,910.99
16	IDC + Financing fee	519.77	211.97	123.96	183.84
	Total capex for private developer	**~ 5,881.00**	**2,373.58**	**1,412.51**	**2,094.83**

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2 ANNEXURE -01 – TECHNICAL DRAWINGS

2.1 Design connectivity with rail systems viz DFC

The Western Dedicated Freight Corridor (WDFC) is planned to be terminated at a yard near ICD Dadri (Inland Container Depot Dadri). This yard is designated as WDFC Yard.

Connection of 'MMLH' to Western DFC yard was designed in consultation with DFCCIL and a Masterplan was prepared for the same as per the Detailed Project Report in February 2025.

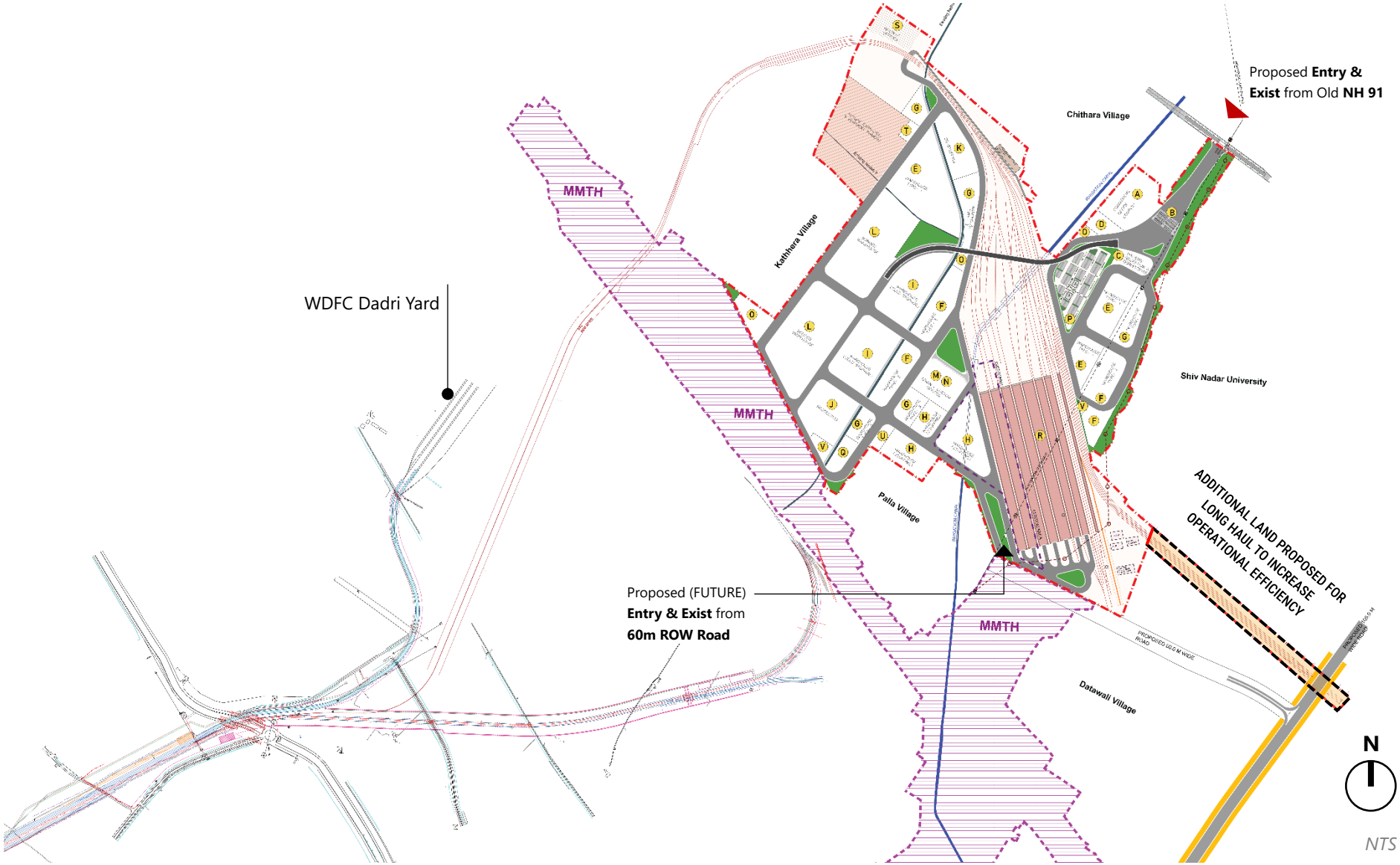
However, redesign of Spur line (approach track) for MMLH and yard was needed due to the following issues discussed with DFCCIL –

- Need of a Long Haul in the MMLH yard.
- Need of more gradual turning radius for the rail wagons from the approach track to the yard.

Due to the significant redesign of the Spur lines, Yard & Stacking area and the addition of a Long Haul, a revised masterplan has been prepared based on the technical specifications proposed in the older masterplan. The area programming and the overall built-up areas for different functions have been carried forward from the older masterplan.

Interactions have been carried out with DFCCIL Officials, at various stages, and the plan and profile of the access line has been finalized. WDFC yard besides connection to MMLH also provides connection to ICD Dadri and EDFC corridor. The alignment of the three corridors is illustrated in the figure below. EDFC & WDFC have been planned to converge at Dadri yard of DFC. WDFC flyovers would fly over Delhi-Howrah IR lines.

Figure 2-1 Connectivity of MMLH from WDFC Dadri Yard



2.2 Regional Connectivity of MMLH

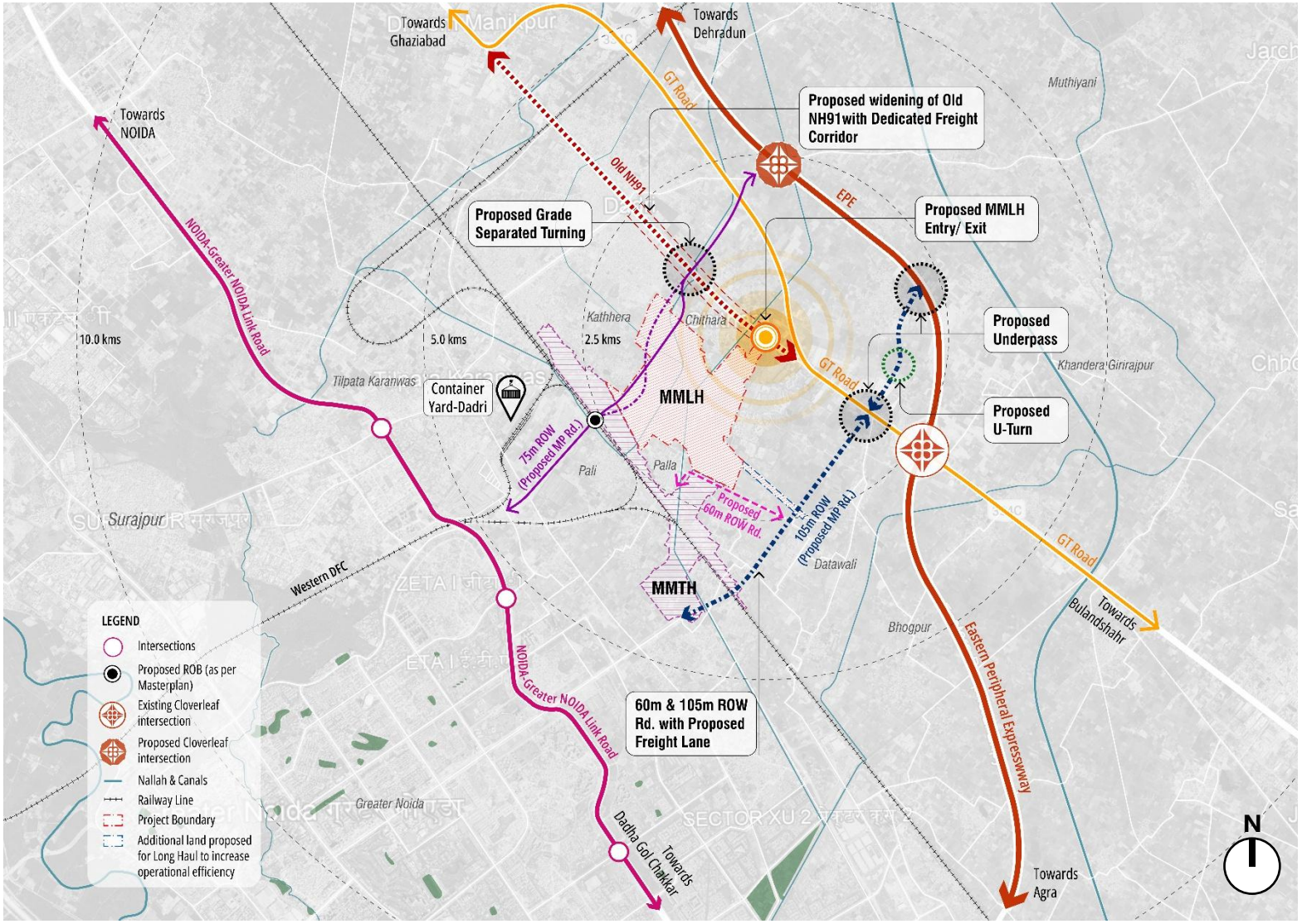
The MMLH site is accessible from the north-east via Old NH91, which has been proposed as the primary entry and exit. Currently, Old NH91 is a 6m wide road connecting GT Road near RV Northland School in the east to Amka/Dhoom Manikpur Village Circle in the west. This 7 km stretch serves both local traffic and acts as an alternate route for GT Road commuters.

Parallel to Old NH91, the GT Road connects to the Eastern Peripheral Expressway (EPE) through a cloverleaf intersection near Beel Akbarpur. In the Greater Noida Masterplan 2041, a 105 m ROW road has been proposed in the north–south direction to link GT Road with the Noida–Greater Noida Link Road, running adjacent to the MMLH site on the east. Similarly, a 75 m ROW road has been proposed on the west to connect the EPE with the Noida–Greater Noida Link Road. This road will be realigned to pass through the MMLH, crossing the 45 m ROW internal road, and join the GT road.

To accommodate heavy vehicular traffic, Old NH91 is proposed to be widened with dedicated freight lanes on both sides. A vehicular underpass is also planned opposite the primary entry/exit of the MMLH to allow uninterrupted through-traffic, while truck and trailer entry/exit will remain at grade.

In addition, the existing Container Depot in Dadri, along with the Logistic Park, already generates significant heavy vehicle movement, including container trucks and trailers, on the surrounding road network. Considering this, and the additional traffic demand expected from the MMLH, it is proposed that all major roads in the area be equipped with dedicated freight lanes to streamline truck and trailer circulation while easing pressure on regular traffic.

Figure 2-2 MMLH - Proposed Regional Connectivity

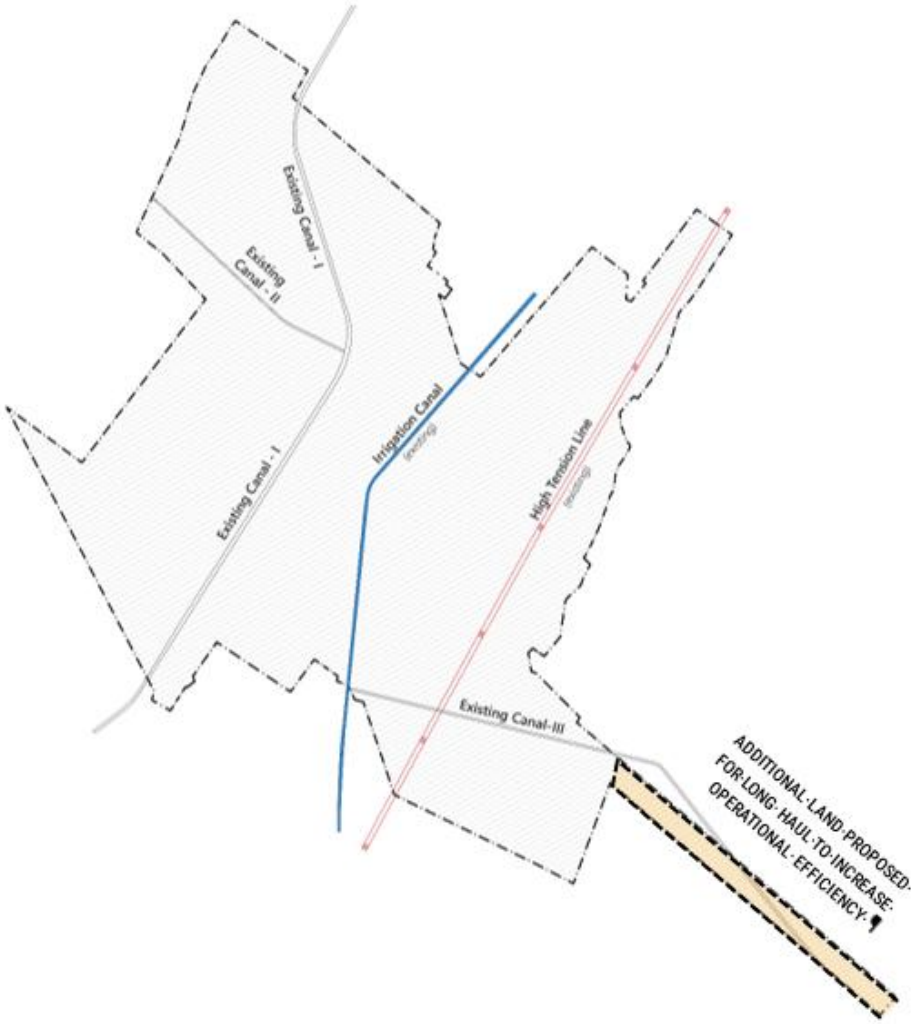


2.3 Development of master plan and layout

2.3.1 Use of natural Features

- Irrigation canal has been used as a natural segregation between two distinct zones, warehousing facilities & logistics area. **Vehicular access to the canal shall be planned** along its stretch for its regular inspection, cleaning and maintenance. Also, Manpower of UP Irrigation department shall be provided entry for inspection and cleaning of canal. The existing Canals' alignment shall be kept as existing with access along them for the UP-Irrigation dept. to inspect and maintain it regularly.
- High-tension (HT) lines are proposed to run across the site along the designated green buffer zone. This approach ensures occupant safety while providing the necessary clearance for the lines. Additionally, the green buffer, enhanced through strategic plantation, will contribute to a more inclusive and environmentally sensitive development by introducing much-needed breathing spaces within an otherwise paved landscape.

Figure 2-3 use of Natural Features



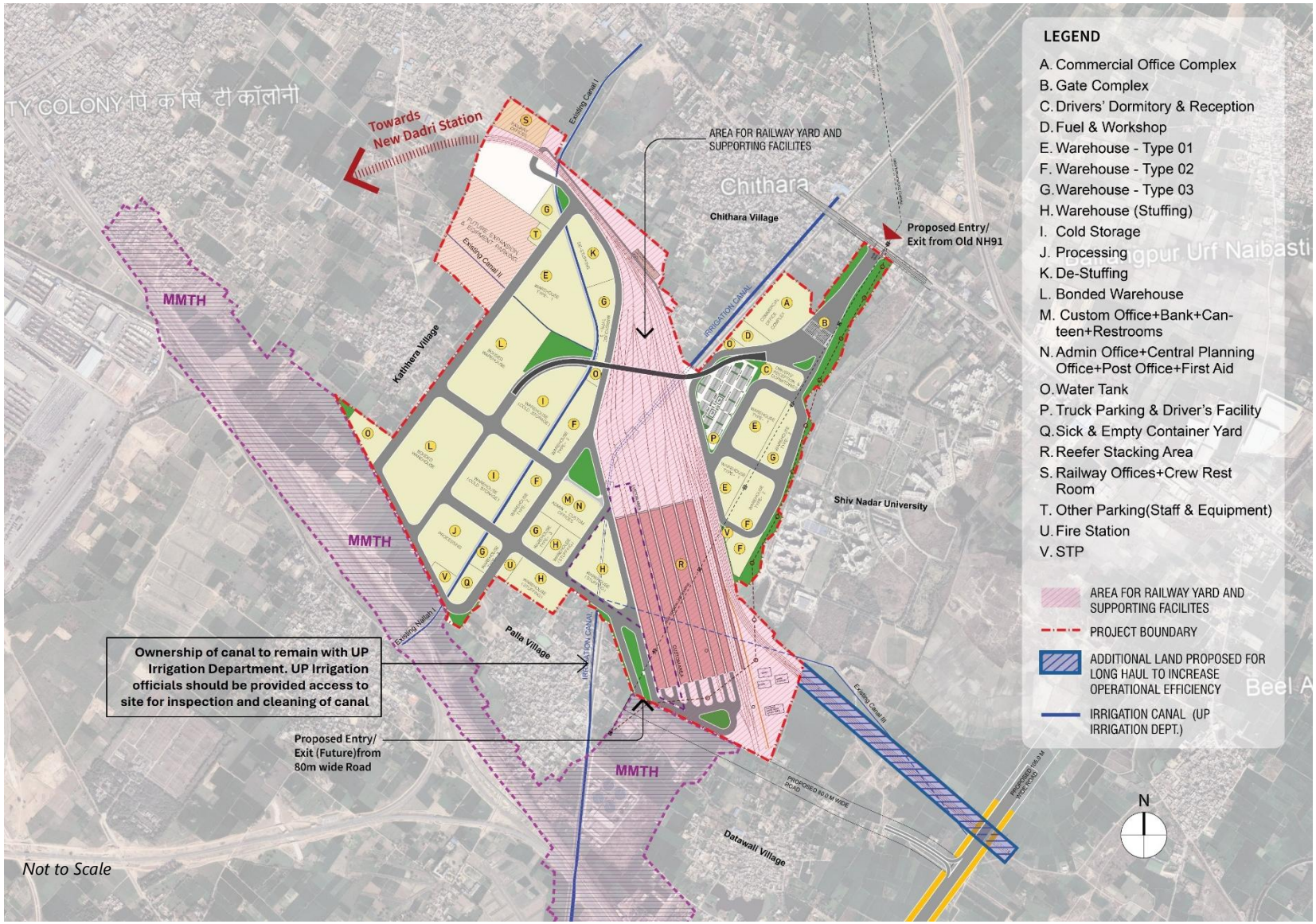
Map not to scale

2.3.2 Zoning

The entire master plan has been conceptualized to create distinct yet connected zones. Freight zones (loading/unloading from trains) have been planned on the south-west part of the site, leaving a clean chunk of land on both the east & west side for warehousing and other facilities. The zone under the HT line that cut across the site has been planned as a green area lined by warehouses. Bonded warehouses have been planned on the west side of the site, thus segregating themselves with a controlled entry from the rest of the development. Customs Offices & Administrative offices have been located centrally to enable easy access from all zones. A central park near the administrative area has been proposed to create a green and inclusive environment. Commercial zones have been planned with segregated access from outside road, thus avoiding congestion within the precinct. A road has been proposed along the existing Canal-1 that would facilitate its regular cleaning & maintenance. Utilities such as water tanks, STP and substations have been planned in accordance with the site 's overall slope and at locations which are quite segregated from the rest of the facilities.

The Long Haul of the rail yard has been proposed to be developed at a later stage. This Long-Haul is required for the operational efficiency and accommodating long haul train only and is not expected to increase the revenue of the logistic hub.

Figure 2-4 Zoning of MMLH



The railway yard has been sub divided into EXIM yard and domestic yard. EXIM yard deals with levels dedicated to import & exports, domestic yard deals with non-EXIM rail traffic & logistic zone providing outward traffic train examination, maintenance & backup yard to take-up for difference incoming in & outgoing rakes.

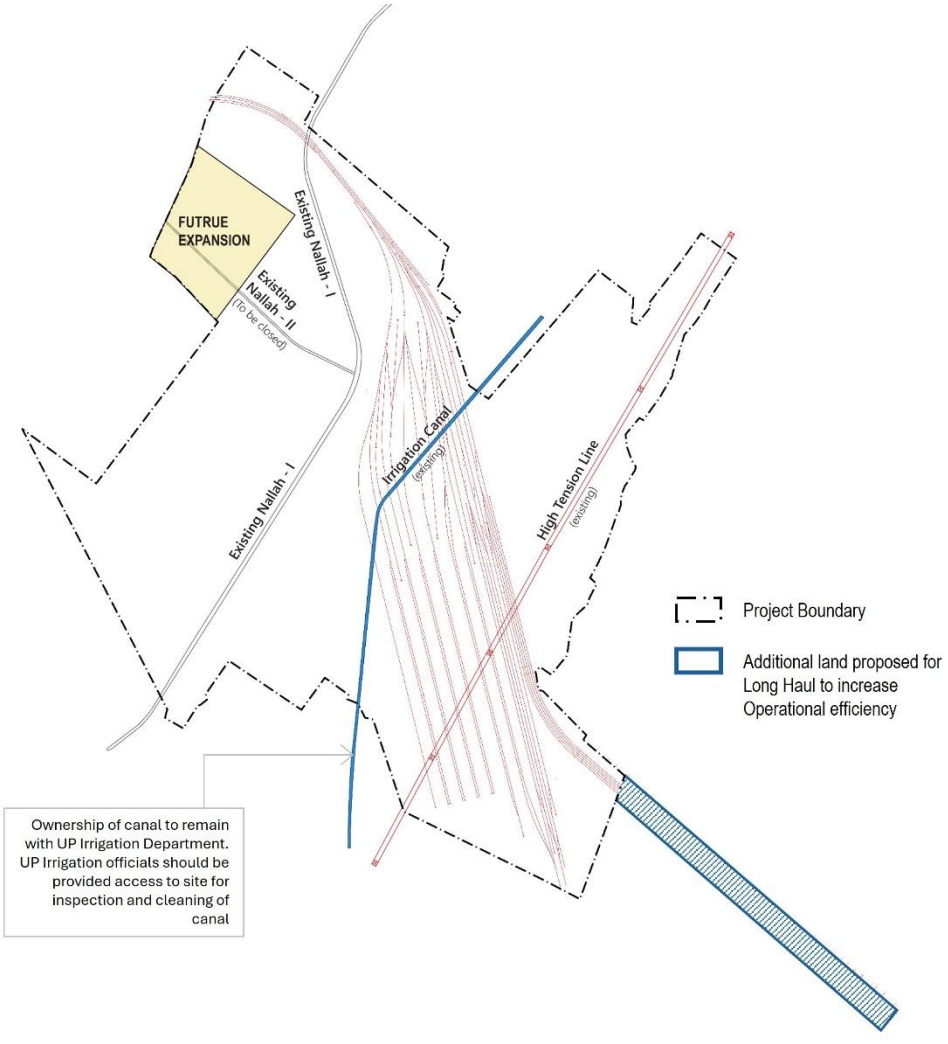
2.3.3 Future Expansion

In the master plan, provision for future expansion and the corresponding space requirement has been considered. In the current facility all the land which could be easily used has been considered and provided for current use and some land as described below is only available for future expansion.

About 14.89 ha of unutilized land has been left for future expansion on the west side of the logistics zone. This could be used by provision of a special access arrangement for which future provision for connecting the underpass has been planned under the tracks to enable the use of land in future.

At a later stage, the Long Haul of the rail yard shall be developed which will increase the overall efficiency of the rail yard by accommodating long haul trains. This addition is not expected to increase the revenue of the logistic hub.

Figure 2-5 Future expansion of MMLH



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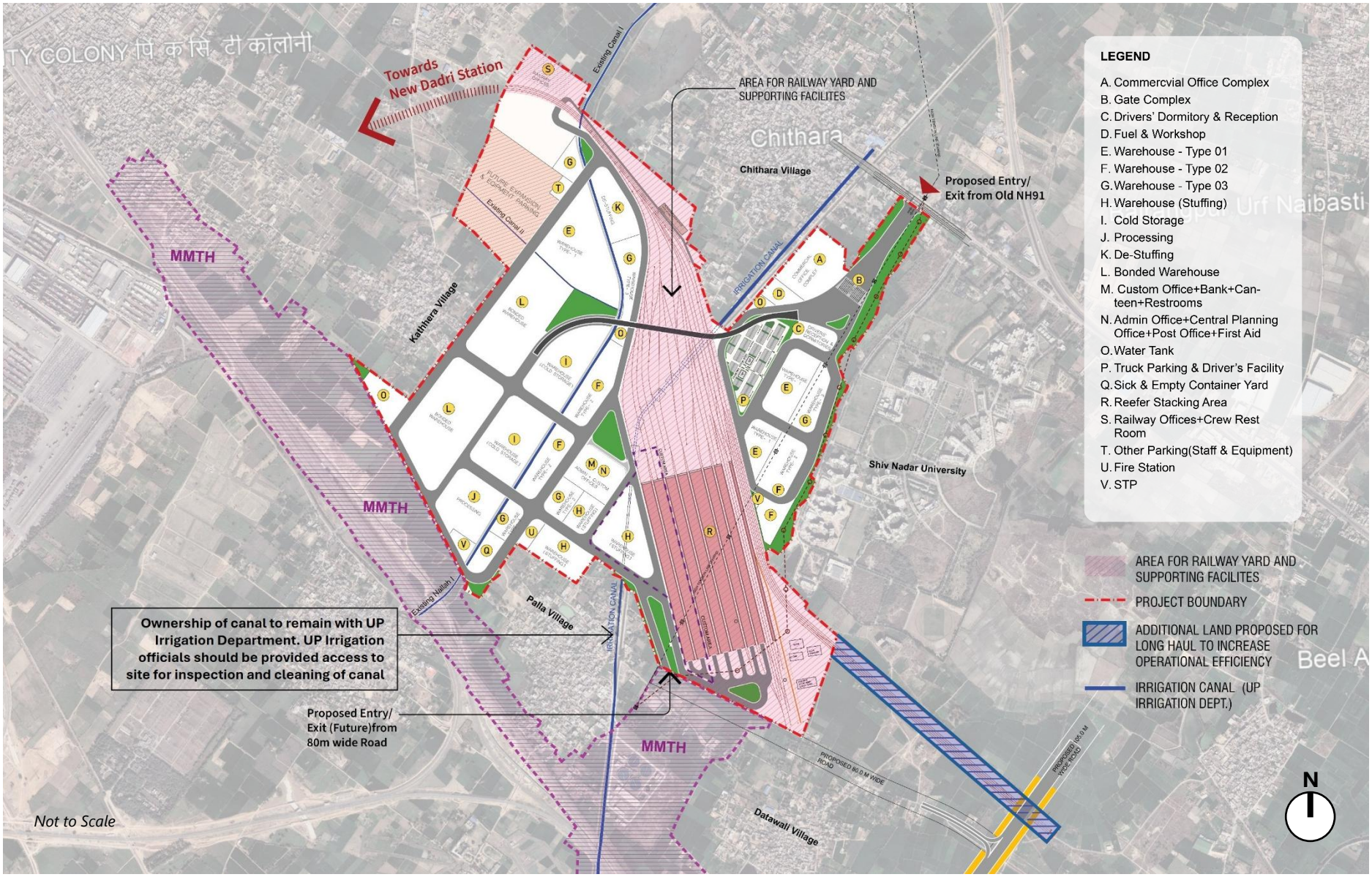
2.3.4 MMLH Masterplan

A sketch of MMLH master plan, developed after considering above concept and various requirements is shown in the figure below.

2.3.4.1 Salient features of the masterplan

- Different type of structures covered in above Master plan are labelled from A to V
- Commercial office complex buildings are labelled A.
- Gate Complex is labelled B; it houses toll gates and weighbridges.
- Drivers' dormitories are labelled C
- Fuel and Workshop unit is labelled D
- Brick & Mortar Warehouses Type I, 5 in no total built-up area 2,22,556 square meter labelled E
- Brick & Mortar Warehouses Type II, 7 in no total built-up area 1,83,291 square meters labelled F
- Brick & Mortar Warehouses Type III, 14 in no total built-up area 1,34,848 square meters labelled G
- Stuffing Warehouses 5 in no with total built-up area 27,482 square meters labelled H
- Cold storage 4 in no with total built-up area 65,871 square meters labelled I
- Processing units 2 in no with total built-up area 21,171 square meters labelled J
- De-stuffing unit 2 in no with total built-up area 17,710 square meters labelled K
- Bonded Warehouses 4 in no with total built-up area 1,00,000 square meters labelled L
- The Administration Office, Central Planning Office, Post Office and Custom Offices have been proposed along with supporting spaces such as First Aid Center, Bank, Canteen & Rest room with total built up area 28,724 square meters labelled M & N respectively.
- Electric Substation and Water Tank (overhead and underground) Labelled O
- Truck Parking with driver's facilities have a combined built-up area 14,250 square meters labelled P
- Empty & sick containers labelled Q, space for reefers in area labelled R, railway offices labelled S, equipment parking and other parking labelled T, fire station labelled U
- WTP/ STP are labelled V.
- Steel and cement warehouses are included in MMLH yard

MMLH yards, open platforms, steel and cement warehouses are in logistic zones, connected via various access roads.



2.3.4.2 3d Views

3-D view of MMLH facilities is shown in the figure below

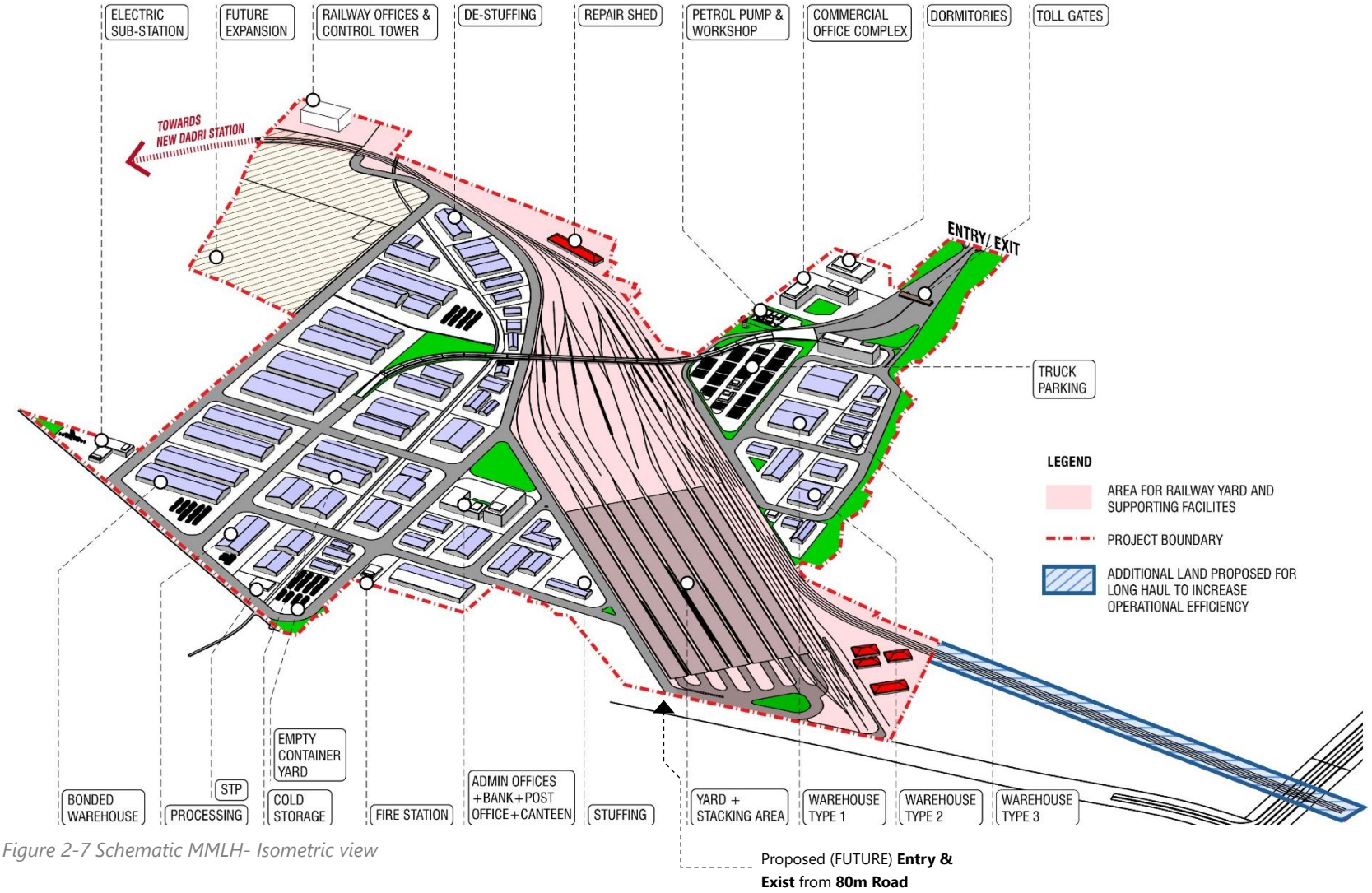


Figure 2-7 Schematic MMLH- Isometric view

2.3.4.3 Vehicular movement & circulation (Internal)

Vehicle movement within the MMLH will be organized across two zones, connected by 45 m and 30 m R.O.W. roads. The main entry/exit is proposed on the north-east side of the site, accessible from Old NH91. Upon entry, trucks and trailers will pass through 10 toll gates for checking and weighing. The two zones will be linked via a 24 m wide railway overbridge, ensuring smooth circulation of trucks, trailers, and other vehicles, as illustrated in the diagram below.

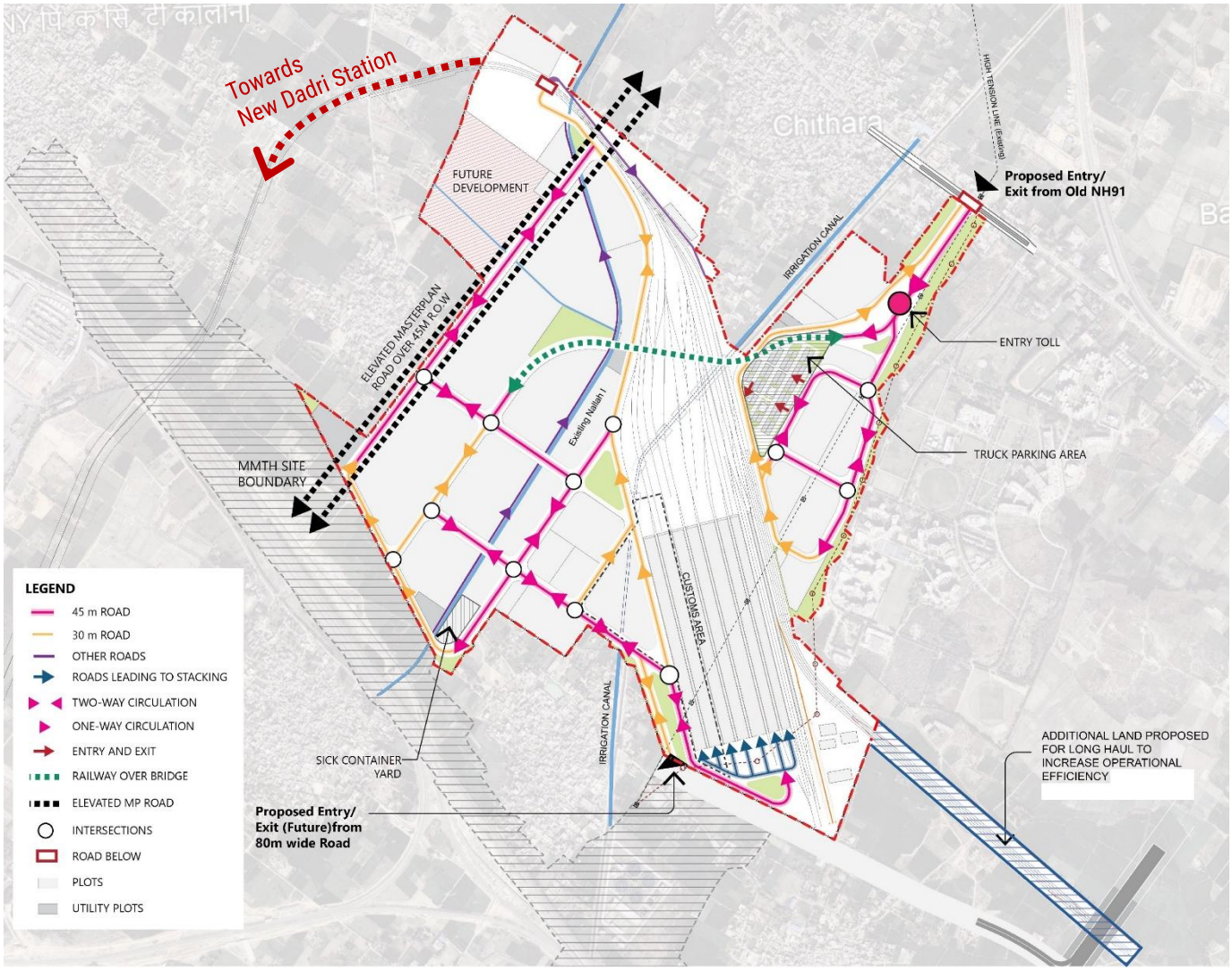


Figure 2-8 Vehicular Movement and Circulation (Internal)

2.4 Other Features within MMLH

2.4.1 Boundary Walls

The following boundary walls are provided for in the MMLH

- A boundary wall around the MMLH is proposed to isolate it from the surrounding area.
- The EXIM area has been isolated from other areas through a boundary wall or fencing.

- A boundary wall along the canal is proposed to isolate it from other areas. All these boundary walls are shown in the figure below.

2.4.2 Canal and Canal (Drain)

There is an irrigation canal crossing the MMLH plot, bifurcating the MMLH port in two parts. As per master plan, a flyover has been proposed to be constructed to connect these two parts to facilitate through movement of vehicular traffic.

The irrigation canal has been proposed not to be disturbed, and circulation will be planned with suitably planned culverts and bridges wherever the project roads pass the Irrigation canal. The detailed design of bridges and culverts will be done by the developer during the construction stage.

There are two drains/canals traversing MMLH plot, at the location of these drains, critical facilities of MMLH like Railway Yard and Sidings, warehouses have been planned with multiple rail lines, as depicted in the Conceptual Master Plan. Also, number of joint site visits have been conducted along with officials from the Irrigation Department, GNIDA, NICDC. The following is the key outcome of the site visits and discussions.

- Canals I & II are irrigation channels and will be kept untouched, except for a road abutting the canals is proposed to facilitate its regular inspection & maintenance. Wherever required, the canals shall be covered with removable slabs in the Project Area to facilitate maintenance.
- Both the upstream and downstream levels of the diverted/ relocated of the canal can be taken up only after obtaining necessary environmental clearance
- Access needs to be provided along the Canals for maintenance and inspection.

2.4.3 HT and LT Lines

There is a HT line which crosses the MMLH plot from south to North direction. In the MMLH master plan, this HT line has been proposed to be shifted and realigned (as shown in the figure) for enhanced safety. A green buffer area has been proposed under these lines. The HT line has a clearance of ~12 m from ground level. Wherever adequate clearance is not available, the HT lines need to be raised/shifted by the concerned power distribution agencies as a deposit work basis.

11 KV electric line is crossing the MMLH plot along the existing canal. This LT line is proposed to be replaced by an underground cable. HT line crossing the project area may need increasing in certain locations

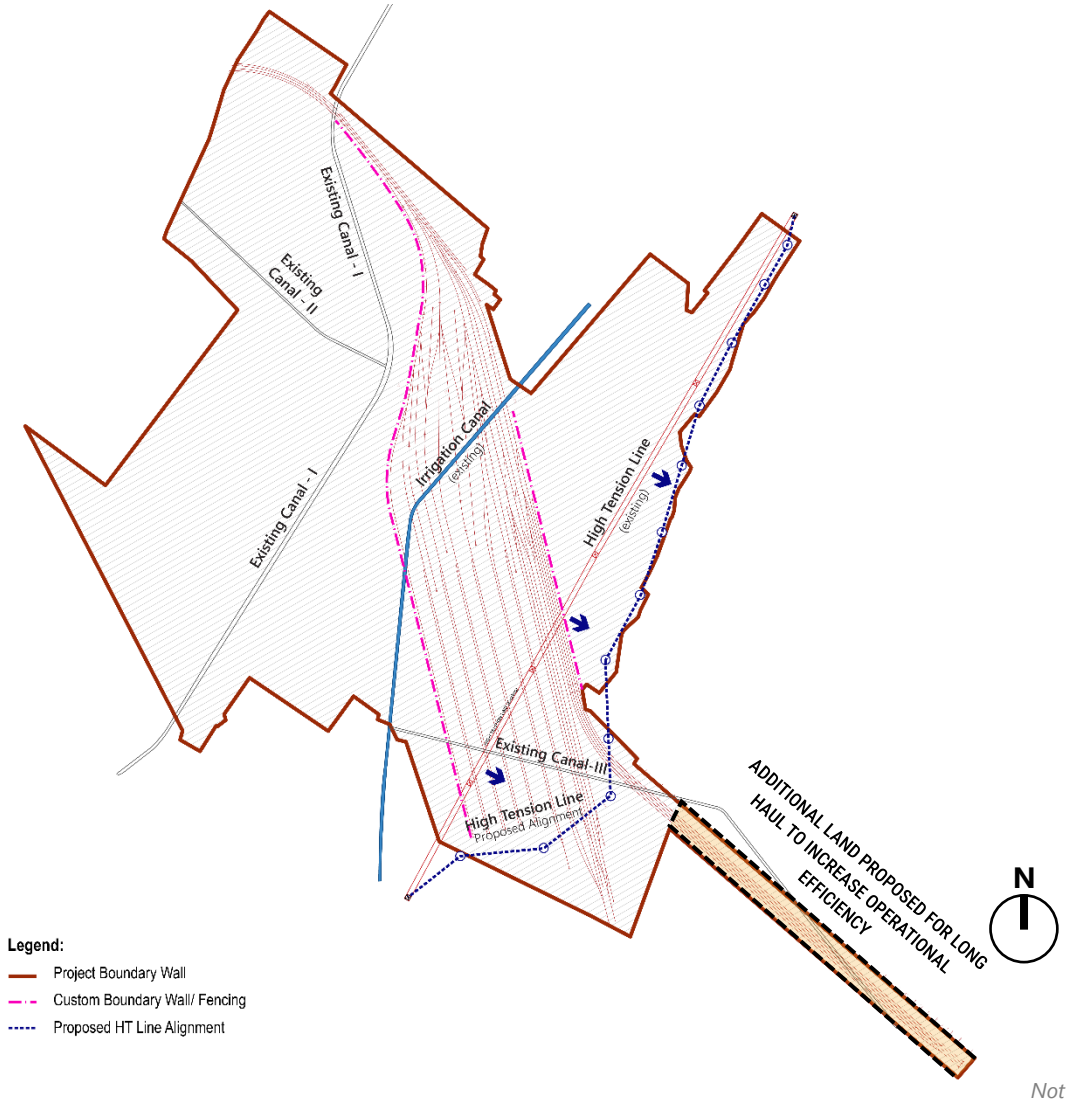
LT lines are crossing the MMLH plot, infringing with facilities like MMLH yard, Warehouses and other facilities. LT line of ~4,880 meters is running within the project boundary. This needs to be re-laid underground by the electrical Department as deposit works.

In - principal approval from concerned DISCOM/ PVVNL is required for shifting or raising (as needed) of HT lines and LT lines crossing the MMLH Project Site. The feasibility of the realignment and shifting of the HT line is being coordinated with the concerned department/s and is subjected to the final

decision of the same. Correspondence with the power distribution agencies has been enclosed as **Annexure 6.**

Note: The detailed planning for shifting or raising the HT and LT lines in the MMLH Project will be undertaken after the appointment of the Developer. At this stage, in-principal approval for the shifting has been obtained from PVVNL by the previous consultant.

Figure 2-9 MMLH Boundary Walls



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