NEPAL ELECTRICITY AUTHORITY
TRANSMISSION/PROJECT MANAGEMENT DIRECTORATE

A YEAR BOOK-FISCAL YEAR 2024/2025 (2081/2082 BS)

400/220 kV Hetauda Substation

AUGUST 2025 (BHADRA 2082)

DURBAR MARG, KATHMANDU, NEPAL

Grant Agreement Signing Ceremony between the Government of Nepal and CIDCA, China

Malekhu 132/33 kV Substation

MESSAGE FROM THE MANAGING DIRECTOR

It is with great pride and satisfaction that I extend my warmest congratulations on the momentous occasion of the 40th Anniversary of Nepal Electricity Authority (NEA). The joint publication of this yearbook by the Transmission Directorate and Project Management Directorate offers a timely and meaningful reflection on our collective journey, remarkable achievements, resilient responses to challenges we face, and unshakable commitment to building sustainable energy future.

Over the past four decades, NEA has evolved into a cornerstone institution powering the dreams and aspirations of the nation. The contributions of the Transmission and Project Management Directorates have been instrumental in establishing a resilient and reliable power transmission network that serves both domestic energy demands and cross-border energy trade.

In the fiscal year 2081/82 (2024/25), NEA proudly sustained its stature as a **net exporter of electricity by 699 million units**, with a **gross export of 2,380 million units**, playing a growing role in regional power integration. Efficient system operation, timely commissioning of infrastructure, and effective load management have collectively ensured system stability and delivery of quality electricity nationwide. During this fiscal year, **253 circuit kilometers** of transmission lines and **1,073 MVA** of substation capacity were added to the INPS - a testament to the hard work, coordination, and perseverance of our teams. I express my deepest gratitude to all staff and stakeholders who, despite formidable challenges—ranging from land acquisition and right-of-way hurdles to forest clearances and financial constraints—remained steadfast in their mission.

Nepal's expanding hydro and solar capacity demands a stronger, future-ready transmission network. NEA is developing 66 kV to 400 kV lines and substations, upgrading infrastructure to meet 2030-2050 demands with N-1 contingency compliance. To accelerate key projects, NEA will collaborate with private investors through Public-Private Partnerships (PPP), ensuring timely execution and smoother renewable integration. Additionally, high-capacity transmission backbones-including multi-circuit corridors and urban underground cabling are underway to enhance grid reliability. Together, we can build a sustainable and secure energy future for Nepal.

NEA continues to strengthen collaboration with regional partners and financial institutions to mobilize the significant investments required to realize these ambitious transmission targets. We call upon our development partners and financing institutions to continue their critical support in bridging funding gaps and accelerating project implementation.

This 40th anniversary, a ruby jubilee, is more than a commemorative moment-it is a clarion call to rededicate ourselves to a shared vision of a cleaner, smarter, and more interconnected energy future. With strengthened resolve, we look ahead to a decade where NEA is not only a pillar of national energy security but also a regional leader in sustainable power trade across South Asia.

In conclusion, I extend heartfelt appreciation to the editorial team behind this commemorative yearbook. Your efforts ensure transparency, continuity, and inspiration for all stakeholders involved in Nepal's power sector. May this yearbook provide meaningful insight into the pivotal work being carried out by the Transmission Directorate and Project Management Directorate.

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Hitendra Dev Shakya
Managing Director

MESSAGE FROM THE
DEPUTY MANAGING DIRECTOR, PROJECT MANAGEMENT DIRECTORATE

The Project Management Directorate (PMD) of the Nepal Electricity Authority (NEA) has been executing transformative power projects with financial support from the Asian Development Bank (ADB), the European Investment Bank (EIB), and the Government of Norway. This yearbook offers a valuable opportunity to showcase PMD-led initiatives, including transmission line and substation projects, as well as NEA's digitalization efforts. Currently, PMD is managing diverse projects, such as high-voltage overhead and underground transmission lines, high-voltage substations, overhead and underground distribution lines and substations, solar power plants integrated with Battery Energy Storage Systems (BESS), and the adoption of smart technologies. These technologies encompasses Substation Automation System (SAS) and Master Control Centers for existing transmission grid substations, smart metering system in distribution centers, deployment of electric vehicle (EV) charging stations across the country, and establishment of a Data Center and Distribution Control Center. Furthermore, NEA is enhancing its institutional framework through the implementation of a Revenue Management System (RMS) and Enterprise Resource Planning (ERP) system.

On the transmission side, PMD has successfully completed several critical projects. The Kaligandaki corridor 220 kV transmission line, spanning 128km from Dana to Butwal, has been completed alongside associated substations at Dana (220/132 kV, 100MVA; 132/33 kV, 25MVA), Kusma (220/132 kV, 100MVA) and the New Butwal substation at Sunwal, Nawalparasi (220/132 kV, 100MVA). This helped in power evacuation of hydroprojects of IPPS in Kaligandaki river corridor. Similarly, the Marsyangdi-Kathmandu 220kV double circuit transmission line, stretching 82km from Markichowk, Tanahu to Matatirtha, Kathmandu and the Matatirtha substation (220/132kV, 320MVA) has already been put into operation. The New Bharatpur Substation, with a capacity of 220/132kV and 320MVA, stands as a significant achievement. Additionally, the Samundratar-Trishuli 3B 132 kV double circuit line, spanning 26 km, was finished along with the Samundratar substation (132/33 kV, 60 MVA; 33/11 kV, 16 MVA).

F.Y. 2024/25 marked the significant achievement to PMD as it was able to complete 21 km long 220 kV transmission line from New-Butwal to Bardaghat substation, Markichowk 220/132kV GIS substation of capacity 320 MVA, Amlekhgunj 132/66/11kV GIS substation of 220 MVA capacity in total and Mulpani 132/11kV GIS substation of total 90MVA capacity. Similarly, PMD completed the 42.6 km long 400 kV transmission line from New-Khimti to Barhabise and 220/132/11kV 160MVA GIS substation at Barhabise. In addition, 220/132kV substations at Udipur and Khudi are also substantially completed and Udipur substation is already in operation which will help power evacuation of hydroprojects of Marsyangdi river corridor.

In the distribution sector, PMD has made significant achievements reinforcing the distribution networks of major cities of Nepal including Kathmandu, Bhaktapur, Lalitpur, Pokhara and Bharatpur by implementing the underground distribution lines. The directorate laid 1018 km of 400V, 1063 km of 11kV, and 31 km of 33kV underground cables so far. Additionally, 12 numbers of 33/11 kV distribution substations with a total capacity of 250 MVA along with 394 km of 33 kV, 543 km of 11 kV, and 522 km of 400 V overhead distribution lines are also completed till date across various places in the country.

PMD is also spearheading multiple ongoing projects across Nepal. These include the construction of 176 circuit km of 400kV, 274 circuit km of 220kV, and 343 circuit km of 132kV transmission lines, alongside substations

with total capacity of 3,893 MVA. Additionally, PMD is constructing 323km of 33kV overhead lines, 950 km of 11 kV overhead lines and 1,000 km of 400V overhead lines along with the 10 new 33/11 kV substations and 520 distribution transformers in Madhesh province only.

Embracing digitalization, PMD is advancing NEA's transition to a smart grid to enhance operational efficiency, minimize energy losses, and improve consumer services. A smart metering system has been successfully piloted in the Ratnapark and Maharajgunj Distribution Centers, with plans for broader implementation across the Kathmandu Valley. NEA's Data Center, located at the Load Dispatch Centre Premise in Siuchatar, is now operational, and the Distribution Control Center (DCC) within the same facility is also complete. Integration of the DCC with 11kV switching stations and substations is in progress, paving the way for the automation of Kathmandu's underground distribution system. The Substation Automation System (SAS) is nearing completion for 13 grid substations in the Kathmandu Valley, with significant progress in 39 additional substations nationwide. To promote greener technologies, PMD has installed 62 fast EV chargers at strategic locations. The RMS is being implemented, while the ERP bid is in preparation.

PMD has also conducting detailed engineering and environmental studies for over 2,000 circuit km of 400kV and 290 circuit km of 132 kV transmission lines, along with associated substations. A "Transmission Master Plan for Major Cities of Nepal" is developed by PMD to ensure sufficient power delivery to major cities for the next 30 years, and the "Distribution System Master Plan" for Nepal has been completed.

I extend my heartfelt gratitude and congratulations to the entire PMD staff and project teams for their unwavering dedication and outstanding efforts. Special appreciation goes to the team for producing this yearbook, which highlights PMD's vital contributions to Nepal's energy sector.

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Tara Prasad Pradhan
Deputy Managing Director

MESSAGE FROM THE DEPUTY MANAGING DIRECTOR, TRANSMISSION DIRECTORATE

The Transmission Directorate, as a core component of NEA's Transmission Business Group, continues to evolve in its mandate to ensure the development and operation of a robust, reliable, and efficient transmission network across the country. With a dedicated team and an expanded organizational structure, the directorate has focused on enhancing the quality, reliability, and reach of the national grid.

In Fiscal Year 2081/82, Nepal exported around 2,380 million units (MU) of electricity to India and Bangladesh, earning substantial revenue and reaffirming its status as a net energy exporter. Additionally, since June 15, 2025, the country has been consistently supplying 40 MW of power to Bangladesh, marking a milestone in cross-border energy collaboration.

The transmission network was expanded by 253 circuit kilometers and 1073 MVA of transformation capacity in year 2081/82. As a result, NEA's transmission system now spans 6760 circuit kilometers with a total transformation capacity of 14,123 MVA. Key accomplishments in the infrastructure development in FY 2081/82 includes the charging of a single circuit of the 84 km Dhalkebar–Nijgadh line, part of the under-construction 400 kV Hetauda–Dhalkebar–Inaruwa Transmission Line at 132 kV voltage level. In the Trishuli Basin, both the Chilime–Trishuli 220 kV Transmission Line and the Chilime Hub Substation were successfully commissioned. Similarly, with the completion of the second-circuit stringing of the Dhungesanghu–Basantapur 220 kV Transmission Line and the Dhungesanghu Substation, the full scope of the Koshi Corridor 220 kV project has been realized. Several other infrastructures, including 132 kV substations at Loharpatti, Burtibang, and Paudi-Amrai, along with the Dhalkebar–Loharpatti 132 kV Transmission Line were also commissioned. In addition to this, the transmission capacity of the approximately 153 circuit kilometers of the existing Butwal-Sunwal-New Butwal, Damauli-Bharatpur and Kushah Duhabi 132 kV lines were upgraded through the existing conductor replacement by equivalent HTLS conductors. Many more substations and lines are in the under construction and study phase.

Thirty two power plants (including those from Independent Power Producers) with a total capacity of 1050 MW have been approved for export via the Dhalkebar–Muzaffarpur and Mahendranagar–Tanakpur cross-border lines, with many more in the pipeline. Grid connection agreements have been signed with 48 IPPs, representing 2380.47 MW of future generation capacity, including 585 MW from 25 solar projects.

With Nepal's transmission grid expanding rapidly, ensuring reliable operation and timely maintenance has become increasingly challenging. Harsh terrain, growing network complexity, and the rising frequency of natural disasters such as floods, landslides, and storms exacerbated by climate change are testing our resilience. NEA is committed to adopting modern monitoring systems, risk-based maintenance, and rapid response strategies to safeguard the grid and ensure uninterrupted power supply to the nation.

Despite these accomplishments, the construction of several transmission lines and substations continues to face delays due to persistent social and environmental challenges. Long-overdue policy reforms and amendments to relevant acts are necessary to overcome these obstacles.

Moreover, a significant investment gap persists due to limitations in fiscal budgetary allocations. With over 11,000 MW of hydropower projects already under PPA and applications for nearly 16,000 MW more, expanding transmission capacity has become an urgent priority. To address this and overcome the transmission backlog, NEA is opening the door for private sector participation through the PPP model, inviting capable investors to develop major high-voltage lines under the ARR-based competitive bidding process. This collaborative approach will be key to timely power evacuation and maximizing Nepal's hydropower potential. NEA must continue to leverage financial assistance from development partners including ADB, World Bank, KfW, EIB, JICA, and the EXIM Banks of India and Korea and adopt reinvestment models to realize planned projects and achieve our national target of evacuating 28,500 MW by 2035.

Finally, I sincerely appreciate the team involved in compiling and publishing this valuable Yearbook. I believe it will serve as an important reference for all stakeholders and provide meaningful insights into the progress and priorities of Nepal's transmission sector.

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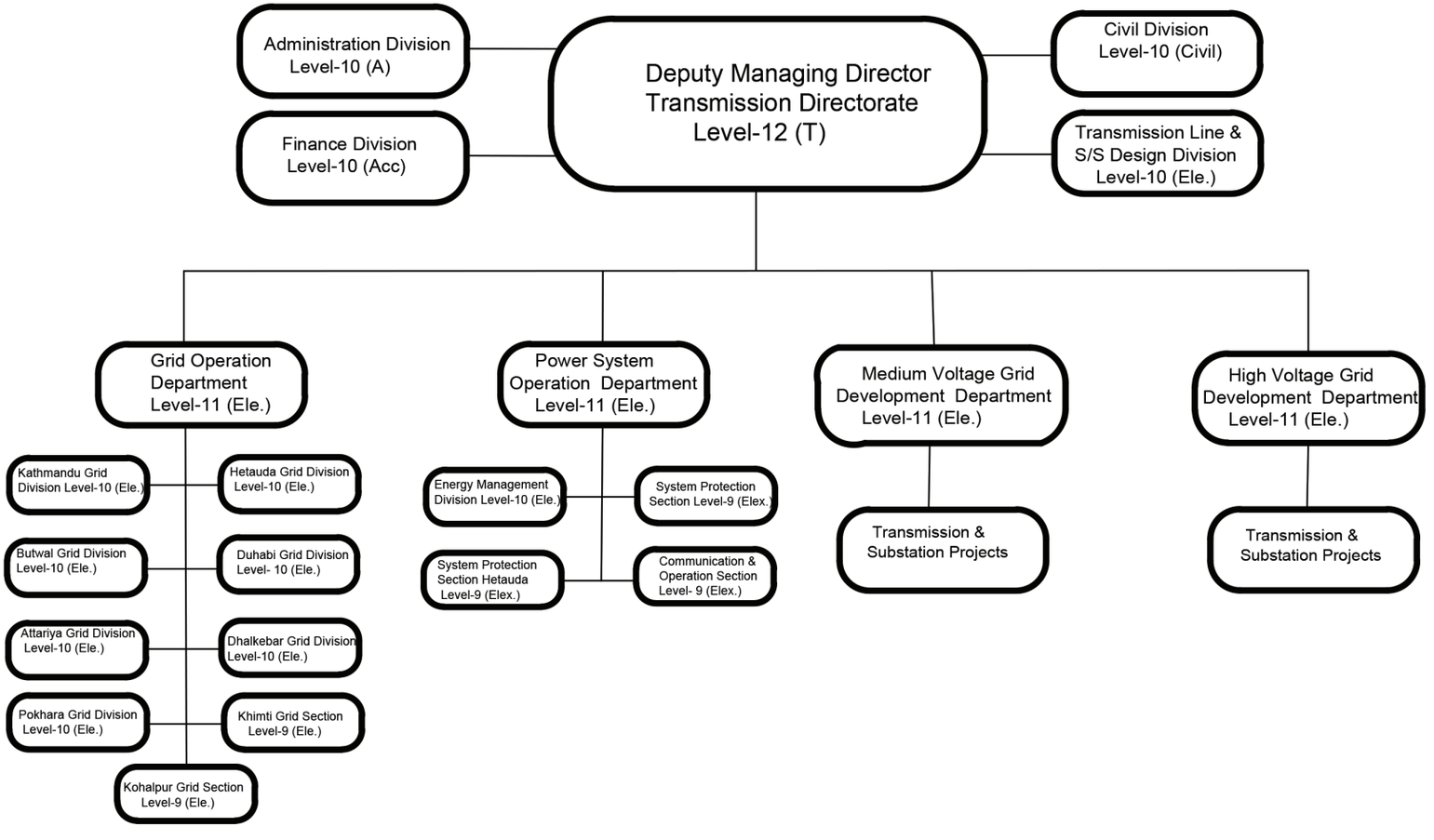
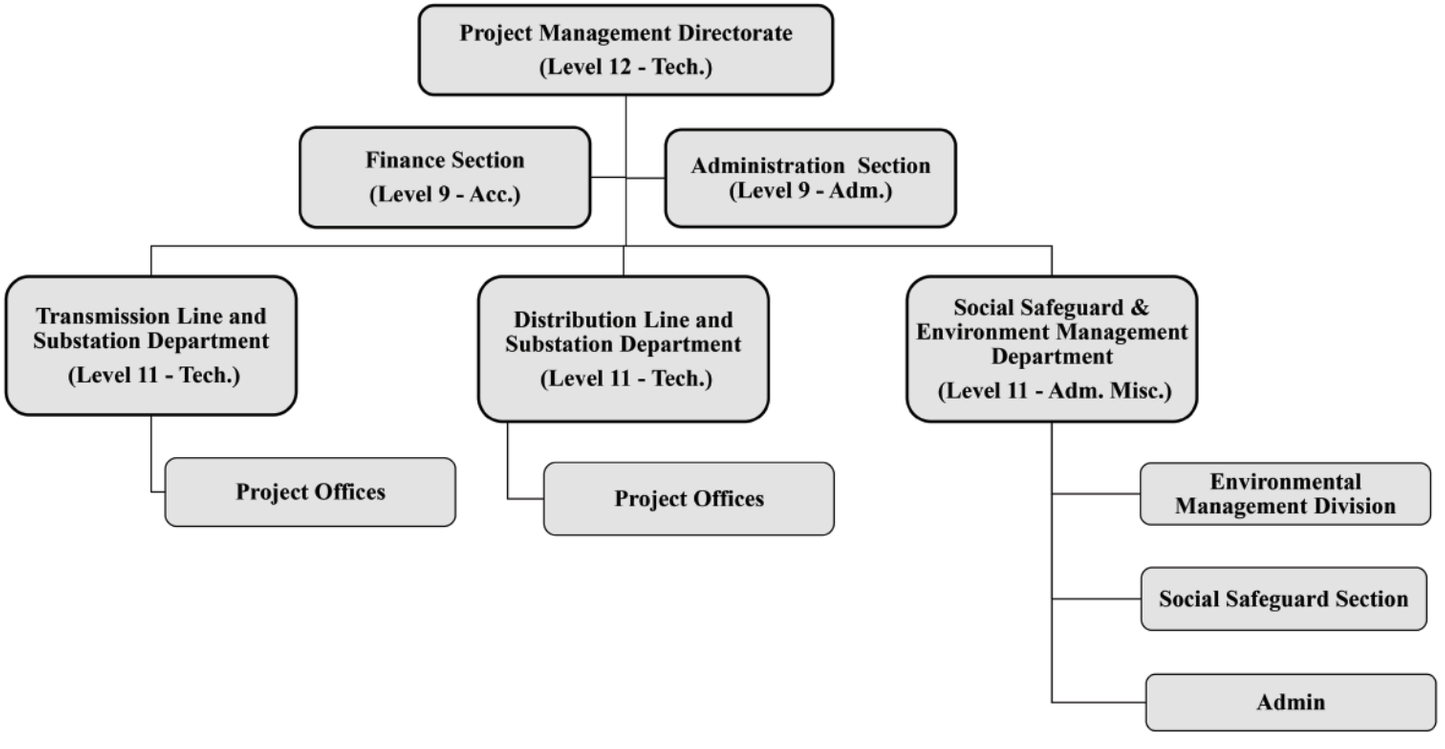
(Rajan Dhakal)
Officiating Deputy Managing Director

ORGANIZATION STRUCTURE
OF
TRANSMISSION DIRECTORATE



ORGANIZATION STRUCTURE
OF
PROJECT MANAGEMENT DIRECTORATE



TRANSMISSION DIRECTORATE
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Officiating Deputy Managing Director
Transmission Directorate

Mr. Rajan Dhakal
Director
Grid Operation Department

Mr. Shyam Kumar Yadav
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Nepal-India Electricity Transmission
and Trade Project

Mr. Kedar Raj Silwal
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Medium Voltage Grid Development
Department

Mr. Thark Bahadur Thapa
Director
High Voltage Grid Development
Department

Mr. Chandan Kumar Ghosh
Director
Power System Operation Department

Mr. Basanta Kumar Dhungana
Division Chief Finance

Mr. Jipananda Shrestha
Division Chief
Administration

PROJECT MANAGEMENT DIRECTORATE
DIRECTORATE/ DEPARTMENT/ DIVISION CHIEFS

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Deputy Managing Director
Project Management Directorate

Mr. Juju Ratna Shakya
Director
Transmission Line and
Substation Department

Mr. Achut Dawadi
Director
Social Safeguard and
Environment
Management Department

Mr. Chandha Neupane
Director
Distribution Line and
Substation Department

Mr. Sitaram Takhachhen
Section Chief, Administration

Mr. Pharshuram Pandey
Section Chief, Finance

Abbreviations

ACSR	Aluminum Conductor Steel Reinforced
SC	Single Circuit
DC	Double Circuit
TL	Transmission Line
SS	Substation
P/S	Power Station
HPP	Hydro Power Project
INPS	Integrated Nepal Power System
IPP	Independent Power Producer
NEA	Nepal Electricity Authority
NPR	Nepalese Rupee
GoN	Government of Nepal
ADB	Asian Development Bank
WB	World Bank
EXIM India	Export-Import Bank of India
KfW	German Development Bank
EIB	European Investment Bank
JICA	Japan International Cooperation Agency
IEX	Indian Energy Exchange

Electrical Terminology

V	(Volt)	-Unit of voltage
kV	(kilovolt)	-1,000 volts
W	(Watt)	-Unit of active power
kW	(kilowatt)	-1,000 watts
MW	(Megawatt)	-1,000 kW
Wh	(watt-hour)	-Unit of Energy
kWh	(kilowatt-hour)	-1,000 Wh
MWh	(Megawatt-hour)	-1,000 kWh
GWh	(Gigawatt-hour)	-1,000 MWh
TWh	(Terawatt-hour)	-1,000 GWh
VA	(Volt-ampere)	-Unit of apparent power
kVA	(kilovolt-ampere)	-1,000 VA
MVA	(Megavolt-ampere)	-1,000 kVA
VAr	(volt-ampere reactive)	-Unit of reactive power

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TRANSMISSION DIRECTORATE

The Transmission Directorate, led by a Deputy Managing Director, is responsible for planning, constructing, operating, and maintaining high-voltage transmission lines and substations ranging from 66 kV to 400 kV. It plays a critical role in connecting power generation plants to distribution networks, ensuring a reliable and high-quality power supply to consumers. The Directorate oversees the development of new transmission lines and substations, as well as the reinforcement and upgrading of existing infrastructure.

It comprises four departments, each led by a director: the High Voltage Grid Development Department (HVGDD), the Medium Voltage Grid Development Department (MVGDD), the Power System Operation Department (PSOD), and the Grid Operation Department (GOD). Additionally, the Nepal-India Electricity Transmission and Trade Project (NIETTP) operates as a department-level project also led by a director.

The main objectives of the directorate are:

- To ensure the development and construction of an efficient, coordinated, and economical system of transmission lines from 66 kV to 400 kV voltage level for smooth flow of electricity from generating stations to the distant load centers.
- To operate, monitor, and maintain the transmission system (66 kV to 400 kV voltage level) in an efficient manner.
- To ensure quality and reliable power supply to consumers by reducing system outages and continuous supervision of INPS.
- To envisage, formulate, and implement short-term, medium term, and long-term development plans of a transmission system network of 66 kV and above voltage levels to evacuate the power generated as per the government strategy as well as to serve the rapidly growing demand of the country.
- To reinforce/upgrade the existing transmission lines and substations capacity.

The Directorate is responsible for operating INPS in synchronous mode with Indian Grid to make the system more reliable, secure, and robust. Moreover, this Directorate is also responsible for power exchange across border countries through cross-border transmission lines. The first-ever 400 kV Dhalkebar-Muzzaffapur cross-border transmission line has played a vital role in the power flow between Nepal and India.

A joint venture between NEA and Power Grid Corporation of India Limited, India, has been established to build the Indian segment of the Butwal-Gorakhpur 400 kV cross-border transmission line, with a contract signed for the transmission line and substation. The Nepal portion of this 400 kV line and related substations is being constructed by Millennium Challenge Account (MCA) Nepal, funded by the Millennium Challenge Corporation (MCC). On March 6, 2024, the 40th MCA-Nepal Board meeting prioritized the construction of 18 km Nepal segment of the Butwal-Gorakhpur transmission line, separating it from the larger 315 km transmission project to expedite progress and meet the cross-border power trade commitments between Nepal and India.

Projects Completed in Year 2024/25 (2081/82)

1. Dhalkebar-Loharpatii 132 kV TLP

The project aims to enhance the power supply by constructing a 132 kV Double Circuit Transmission Line from Dhalkebar to Loharpatti and a 132/33/11 kV Substation at Loharpatti. This infrastructure will enable reliable power delivery to the Mahottari and Dhanusha districts, improving power quality. Upon completion, the region will experience a more stable and efficient power supply, with reduced system losses, resulting in a more robust and sustainable electricity distribution network.

The scope of the project includes the construction of a 20 km long 132 kV double circuit transmission line with ACSR Cardinal Conductor from the existing Dhalkebar substation to Loharpatti, along with 132/33 kV, 2x30 MVA and 132/11 kV, 22.5 MVA substation at Loharpatti. The estimated cost of the project is NPR 1125 million and is jointly funded by the GoN and NEA. The project commenced in February 2021 and was completed in December 2024.

As of July 2025, the line and substation were successfully energized and made operational on August 13, 2024. This has marked a significant development in the region's power infrastructure, enhancing the distribution and reliability of electricity supply. From this substation, power is efficiently transmitted to three major substations, namely the Jaleshwar 33/11 kV Substation, Aurahi 33/11 kV Substation and the Paraul 33/11 kV Substation, via 33 kV feeder lines. Additionally, the Loharpatti Substation serves the local areas by distributing electricity through three separate 11 kV feeders. These feeders ensure the stable and consistent delivery of power to surrounding communities, further strengthening the electrical grid and supporting local energy demands.

Loharpatti Substation

2. Chilime-Trishuli 220 kV Transmission Line Project

The Chilime-Trishuli 220 kV Transmission Line Project was initiated to evacuate electricity generated by multiple hydropower projects in the Upper Trishuli Valley. These include projects developed by Chilime Hydropower Company Limited—namely Upper Sanjen (14.8 MW), Lower Sanjen (42.5 MW), Rasuwagadhi (111 MW), and as well as other Independent Power Producers (IPPs) including Sanjen Khola (78 MW). The project is jointly financed by the German Development Cooperation (KfW), the European Investment Bank (EIB), the European Union, and the GoN. On November 13, 2017, a contract was signed with M/s PINGGAO GROUP CO., LTD (China), which became effective on December 20, 2017. The agreement covered construction of the Chilime Hub New GIS Substation, Trishuli 3B Hub Substation, and the 220 kV transmission line. The revised contract amounts to over USD 6.6 million and NPR 679 million for the transmission line, and USD 7.1 million and NPR 661 million for the substation.

The project scope includes constructing a 28 km long 220 kV transmission line from Chilime Hub to Trishuli 3B Hub. The line is divided into two sections: a 20 km double-circuit section using twin Bison ACSR conductor from Chilime Hub to Mailung, and an 8 km four-circuit section with the same conductor from Mailung to Trishuli 3B Hub to evacuate power from the Upper Trishuli 1 Hydroelectric Project (216 MW). The line consists of 76 towers and spans a total of 72 circuit km. The Chilime Hub GIS Substation, located at Thambuchet in Rasuwa, includes a 2x160 MVA 220/132 kV transformer setup using seven single-phase 53.33 MVA auto-transformers (one as spare), and a 50 MVA 132/33 kV three-phase transformer for evacuating power connected at 33kV and further distribution to vicinity.

Following the completion of construction and testing, the system was energized with a 220 kV back-feed from the Trishuli 3B Hub on November 6, 2024 (2081.07.21). Upon successfully charging the Chilime Hub New GIS Substation, a 132 kV back-feed was provided to the associated IPPs. As of now, around 246 MW of electricity from these Independent Power Producers is being transmitted through the Chilime-Trishuli 220 kV Transmission line. The project is nearing completion, with approximately 99% of the work done, although some major and minor tasks remain to be finalized in both the substation and the transmission line.

Chilime Hub GIS SS day view.

Night View of SS

The project execution involved various phases of detailed studies including feasibility assessments, Initial Environmental Examinations (IEE), Land Acquisition and Compensation Plan (LACP), as well as continuous technical, social, and environmental monitoring. These were carried out with the support of the Environment and Social Studies Department (ESSD) of NEA and supervision by the consultant, Power Grid Corporation of India Limited. The most significant challenges encountered were the rough terrain, poor road access, harsh weather conditions, and the need for extensive protection works. The stringing of longest span of 1234m at Mailung valley brought the most challenging moments and a lot of attention. The COVID-19 pandemic also played a major role in delaying the project.

Completed Multicircuit line

3. Malekhu 132 kV Substation Expansion Project

The objective of this project is to increase the reliability of the existing distribution lines in the Dhading district by expanding the existing 132 kV Malekhu switching station.

The scope of the project includes the construction and installation of 2x30 MVA power transformers at the Malekhu switching station and 33 kV line bay expansion at the existing Jahare and Dhading Besi 33 kV substation. The estimated cost of the project is NPR 290 million and is jointly funded by the GoN and NEA. This project was initiated in FY 2078/079 and completed on July 12, 2025.

As of July 2025, one power transformer was charged on June 15, 2025 and is currently supplying the station transformer. Another power transformer was also charged on July 12, 2025 and and is presently in a no-load condition. Malekhu-Dhading/ Salyantar 33 kV lines are in the testing phase and under the scope of the Distribution and Consumer Service Directorate. Minor civil and electrical works are yet to be completed by the contractor.

4. Dhungesanghu-Basantapur 220kV Transmission Line (Koshi Corridor 220 kV Package KC-3 and KC-4)

Package KC3 covered the 35 km 220 kV line from Dhungesanghu (Taplejung) to Basantapur and the 132/33 kV AIS Substation at Dhungesanghu, which includes 2x15 MVA transformers (seven 5 MVA single-phase units). Towers were designed for twin ACSR Moose conductors, with single-circuit stringing (second circuit KC4). Awarded to KEC International Ltd. in June 2018 for USD 21.410 million, this package faced remote-access difficulties, huge earthworks, and forest-clearance hurdles. In this package, all of 127, 220kV double circuit towers have been erected and the 34.3km circuit were strung. Since April, 2024 the completed single circuit of line was utilized to evacuate the power generated from the Sanima Middle Tamor Hydroelectric Plant (73MW) at 220kV. Now, having completed the second circuit stringing works through Package KC-4, the substation has been commissioned commissioned by receiving power from Basantapur at 132kV on July 06, 2025.

Package KC4 comprised second-circuit stringing of the Basantapur–Dhungesanghu line and construction of four new 220 kV line bays plus two tie bays at Basantapur Substation. Awarded to Nepal Hydro & Electric Limited in November 2022 (NPR 660.8 million), all design, supply, and installation works

are complete. The transmission line section was commissioned on June 7, 2025; three bay extensions at Basantapur on April 10, 2024, and the remaining three on July 10, 2025.

Under KC-4, the Second Circuit Stringing of Basantapur-Dhungesanghu 220 kV line

5. 132 kV Transmission Line Upgradation Project

The objective of this project is to improve reliability, voltage profile, quality of supply, and enhance the transmission line capacity by upgrading the conductor of existing New Butwal – Sunwal- Butwal (Package A), Damauli Bharatpur (Package B) and Kushaha-Inaruwa-Duhabi (Package C) 132 kV transmission lines. The scope of the project in Packages A and C includes the replacement of 25 and 28 km ACSR Bear conductors with their equivalent High Temperature Low Sag (HTLS) conductors, respectively. Similarly, the scope of the project in Package B includes the replacement of the 43 km ACSR Wolf conductor with its equivalent High-Temperature Low Sag (HTLS) conductor. The estimated cost of the project is NPR 983.5 million and is jointly funded by the GoN and NEA. This project was initiated in FY 2080/081 and completed in June 2025.

As of July 2025, all of the above conductor upgradation works have been completed and put into operation with higher transmission loading.

Comparision of Transmission Line Length in last Ten Fiscal Years

S.N.	FY	Cicuit km				Total	Total Increment (ckt. Km)
		66 kV	132 kV	220 kV	400 kV		
1	2072/073	494	2417			2911	
2	2073/074	494	2596	75	78	3243	332
3	2074/075	514	2717	75	78	3384	141
4	2075/076	514	3143	255	78	3990	606
5	2076/077	514	3240	437	78	4269	280
6	2077/078	514	3541	741	78	4874	605
7	2078/079	514	3817	897	102	5329	455
8	2079/080	514	3979	1101	148	5742	413
9	2080/081	514	4136	1213	644	6508	766
10	2081/082	514	4193	1266	787	6760	253
Total Increment in Ten Years							**3850**

Comparison of Substation Capacity in the Last Ten Fiscal Years

S.N.	FY	Total Capacity (MVA)	Total Increment (MVA)
1	2072/073	2223	
2	2073/074	2618	394
3	2074/075	3198	580
4	2075/076	3935	738
5	2076/077	4300	364
6	2077/078	6434	2134
7	2078/079	7149	715
8	2079/080	8867	1718
9	2080/081	13050	4183
10	2081/082	14123	1073
Total Increment in Ten Years			11899

The details of existing, under construction, planned and proposed high-voltage transmission lines and substations that are being executed by different Departments under this Directorate are presented in Annexure B.

I. Medium Voltage Grid Development Department

The Medium Voltage Grid Development Department, led by a director, oversees the planning, construction, supervision, and monitoring of new transmission line and substation projects up to 132 kV.

A summary of the department's ongoing projects is provided below:

Projects under Construction

1. Burtibang- Paudi Amrai- Tamghas- Sandhikharka- Gorusinghe 132 kV Transmission Line Project

The project aims to strengthen power infrastructure across the districts of Kapilvastu, Arghakhanchi, Gulmi, and Baglung. By extending transmission coverage into these hilly regions, the project aims to improve power supply reliability, reduce frequent outages caused by long radial distribution lines, and minimise technical losses. Additionally, it will support the evacuation of power from multiple proposed hydropower projects in the area. With an estimated cost of NPR 4.76 billion, the project is jointly funded by the GoN and NEA, and was initiated in fiscal year 2065/066 (2008/09). Its completion is scheduled for fiscal year 2082/83 (2024/25).

The project scope includes the construction of 85.2 km of 132 kV double-circuit transmission line using ACSR Bear conductor, along with the construction of five substations. These substations—each with 132/33 kV, 30 MVA and 33/11 kV, 16 MVA capacity—are located in Motipur (Kapilvastu), Sandhikharka (Arghakhanchi), Tamghas and Paudi-Amarai (Gulmi), and Burtibang (Baglung).

Major milestones have already been achieved: the Motipur substation was energized on 2078/08/09, followed by the Motipur–Sandhikharka transmission line on 2078/12/11, and the Sandhikharka substation on 2078/12/12. Similarly, the Tamghas substation was charged on 2078/03/05, and the Sandhikharka–Tamghas line on 2081/03/03. Further progress includes the energization of the Burtibang substation from the LV side on 2081/09/21, and the Paudi-Amarai substation on 2082/01/11, also from the LV side.

Currently, construction of the 32.8 km (65.6 circuit km) transmission line of the Paudi-Amarai Burtibang section is going on. All 134 towers have already been erected. Only the stringing works are remained to be completed, as the forest entry permission is still pending for the RoW clearance.

Tamghas 132/33/11 kV Substation

2. Kushaha (Inaruwa) - Biratnagar 132 kV Transmission Line Project

This project aims to strengthen the power supply system in the Morang and Sunsari districts to accommodate the growing electricity demand from residential, commercial, and industrial users. It also seeks to reduce the overloading issues currently faced by the Duhabi Grid Substation, Rani Substation, and Tankisinwari Substation. The estimated cost of the project is USD 19 million.

The project involves constructing a 22.5 km, 132 kV double circuit transmission line using HTLS Cordoba conductor, connecting the 400/220/132 kV Bhokraha Substation (Inaruwa) to a new Biratnagar Substation at Ramganj Belgachiya, which will house 132/33 kV, 2×63 MVA and 33/11 kV, 16 MVA power transformers.

As of July 2025, all 80 towers have been erected. Stringing has been completed for 22.2 km of the total 22.5 km line, with one span remaining due to pending forest clearance. Out of 11 tower protection sites, work has been completed at 7 locations, with the rest underway. Compensation approval for the Right of Way (ROW) has been finalised, and the distribution process is currently ongoing.

Regarding the substation works, the staff quarter has been completed. The foundation for the 33/11 kV Rani Substation is finished, while the foundation work at the 33/11 kV Tankisinwari Substation has reached 80% completion. At the 132/33 kV Biratnagar Substation, both the switchyard foundation and control building construction are nearing completion. Key switchyard equipment—including the power transformer, disconnecting switches, control and relay panels (CRP), substation automation system (SAS) panels, communication devices, and capacitor banks—has already been delivered to the site. Erection of equipment structures is about 25% complete. The project is targeted for completion within the fiscal year 2082/83.

3. Balefi-Barhabise Corridor 132 kV Transmission Line Project

The project aims to evacuate power generated by various Independent Power Producers (IPPs) in the Balefi Corridor. It involves the construction of a 20 km, 132 kV double circuit transmission line from Pangtan to Bahrabise using ACSR Cardinal Conductor. The project, with an initial estimated cost of NPR 546.69 million, is funded by the GoN. A contract has been signed with M/S Sigma Con. Pvt. Ltd., and completion is targeted within the fiscal year 2082/83.

As of July 2025, the check survey, detailed engineering, resistivity measurements, and soil testing have been completed. Tower and foundation designs, as well as the tower schedule, are finalized. Out of 63 towers, foundations for 59 towers have been completed, and 43 towers have been erected. Most tower parts, conductors, and insulators/hardware have been delivered to the site, and stringing of 3 circuit kilometers has been accomplished.

However, due to changes in the number of trees to be removed within the Right of Way (RoW), a Revised Initial Environmental Examination (RIEE) was necessary. The RIEE report has been approved by the Department of Electricity Development (DoED) on 2081/08/24. The project is currently awaiting final approval from the relevant authorities to resume the suspended conductor and OPGW stringing works.

4. Kohalpur-Surkhet-Dailekh 132 kV Transmission Line Project

Presently, districts namely Surkhet, Dailekh, and Jajarkot face unreliable power supply due to long stretches of low-voltage 33 kV and 11 kV lines, leading to frequent outages and low voltage levels. The project addresses these challenges while also preparing to meet growing demand and enabling the evacuation of power from regional hydropower projects. The transmission alignment traverses Banke-Bardiya National Park and passes through rugged terrain in Surkhet and Dailekh.

The project includes two key transmission sections: a 52 km 132 kV double-circuit line from Kohalpur to Surkhet and a 32 km 132 kV double-circuit line from Surkhet to Dailekh. Substation works involve bay extensions at Kohalpur and Surkhet substations and the construction of a new 132/33/11 kV substation at Dailekh.

For the Kohalpur–Surkhet line, 156 out of 162 tower foundations have been completed, with 150 towers erected and 40 km of the line strung. All private lands (17 locations) required for towers have been acquired. Tree cutting has been completed in Surkhet Forest Division and Banke National Park, while it continues in Bardiya National Park. The key challenges faced in this section include Right-of-Way (RoW) disputes in Baniyabaar, Banke and Subbakuna, Surkhet.

For the Surkhet–Dailekh segment, 44 tower foundations out of 101 are complete, and materials like ACSR conductors, tower stubs, and earthing equipment have been delivered. Of the 56

tower locations in Dailekh, 31 are on private land and have been acquired. In Surkhet, 10 out of 45 private land sites are pending acquisition, with notices to be published soon.

Progress in substation works is also advancing. At the Kohalpur substation, the contractor has nearly completed two 132 kV bay extensions, pending only testing, commissioning, and connection of new busbars. For the Dailekh substation, civil structures like the boundary wall, guardhouse, control room, and store building at Chupra have been completed. Equipment drawing approvals are finalized, and transformer inspections have been initiated. Soil investigations, surveys, and design works, including the layout and single-line diagram (SLD), are complete, and foundation work for the switchyard is set to begin shortly.

5. Dhalkebar – Balganga 132 kV Transmission Line Project

This project has been initiated to enhance voltage levels and ensure a reliable and sufficient power supply in the Dhanusha district. With a total estimated cost of approximately NPR 2,136 million, the project is jointly funded by the GoN and NEA. Initiated in the fiscal year 2075/76, it is scheduled for completion by the end of fiscal year 2082/83 (2026/27 AD).

The project scope includes the construction of a 24 km, 132 kV double circuit transmission line using ACSR Cardinal conductor, along with the construction of a 132/33 kV, 2x63 MVA substation at Balganga, located in Hansapur Municipality – 9. The transmission line will originate from AP 13 of the Dhalkebar-Loharpatti 132 kV line and terminate at the proposed Balganga Substation. This substation will supply power to the 33/11 kV substations at Mujeliya, Yadukoha, Dhanusha Dham, Birendra Bazar, Lohna, and Nagrain.

Tower Erection works

As of July 2025, all transmission line equipment and materials have been delivered to the site. Out of 77 towers, foundations for 75 have been completed, and 73 towers have been erected. In the substation area, gantry and transformer foundation works are currently underway. The ground floor slabs for both the Control Room and Staff Quarter buildings have been completed. Brickwork is ongoing in the Control Room Building, while reinforcement work for the first-floor columns is in progress in the Staff Quarter. Most of the substation equipment is under manufacturing, with some already delivered to the site.

6. Kaligandaki-Ridi 132 kV Transmission Line Project

The project aims to improve the quality and reliability of electricity supply in the Palpa and Gulmi districts and to provide power to CG Cement upon completion. Initiated in fiscal year 2075/76 (2018/19), the project is funded by the GoN and NEA, with an estimated total cost of NPR 1,450 million.

The project scope includes the construction of approximately 22.45 km of 132 kV double circuit transmission line using ACSR

BEAR conductor, the construction of a 132/33/11 kV substation at Kuseni, Palpa, and the extension of a 132 kV GIS bay at the Kaligandaki 'A' Hydroelectric Plant (HEP).

The transmission line construction contract was awarded in April 2022. As of July 2025, foundation works have been completed for 63 out of 70 towers, and 55 towers have been erected. Additionally, 2.88 km of line stringing has been completed. Key materials—such as ACSR BEAR conductors, long rod polymer insulators, hardware, earthing and counterpoise materials, and tower parts—have been delivered to the site.

For the Ridi 132/33/11 kV substation, the contract agreement was signed on November 30, 2022. As of July 2025, the boundary wall, store-cum-guard house, geotechnical works, and design drawing approvals have been completed. Major equipment, including power transformers, circuit breakers, instrument transformers, disconnecting switches, insulators, lightning arrestors, batteries, battery chargers, control and relay panels, and Substation Automation System (SAS) components, has been supplied. The SAS components have undergone factory acceptance testing and have been dispatched. Additionally, the 132 kV switchyard foundation and hill slope cutting have been completed.

At Kaligandaki HEP, the GIS bay extension with associated Local Control Cubicles (LCCs) is under construction. The XLPE cable laying and end-term cable termination have been completed, while control cable laying between the equipment, LCCs, and CRP panels is ongoing.

The 132 kV transmission line, GIS bay extension, and Ridi Substation are all expected to be commissioned in fiscal year 2082/83.

7. Bhumahi – Hakui 132 kV Transmission Line Project

The project aims to meet the rising industrial power demand in the Bhumahi–Bhairahawa Corridor of Nawalparasi (Susta Paschim). It aims to enhance transmission capacity, improve supply reliability, reduce losses, and strengthen the voltage profile of the distribution network in the region.

The project involves constructing a 14.36 km, 132 kV double-circuit transmission line from the Sunwal 132 kV Substation to a newly planned 132 kV Substation in Hakui. The line uses ACSR Cardinal Conductor and steel lattice towers. The Hakui substation will be equipped with 132/33 kV, 2×100 MVA three-phase power transformers, seven 33 kV feeders, and two 25 MVAR capacitor banks.

The contract for the Hakui substation was awarded to Nepal Hydro and Electric Limited in November 2022, while the transmission line construction contract was signed with Mudhbary and Joshi Construction Pvt. Ltd. in February 2023.

Hakui Sub-station

As of July 2025, the control building, 132 kV switchyard, transformer foundations, and guard house structures have been completed. Both 100 MVA transformers have been installed. Works on the 33 kV switchyard foundations, cable trenches, and steel structures are currently in progress.

Regarding the transmission line, foundations for 14 out of 47 towers have been completed. Cadastral surveys and land acquisition for private lands are ongoing. Forest land use approval has been obtained, and the process for tree-cutting approval from the District Forest Office is currently underway.

Foundation works for Sunwal-Hakui Transmission Line tower

8. Amarpur-Dhungesaghu 132 kV Transmission Line Project

The Amarpur-Dhungesaghu 132 kV Transmission Line is a significant infrastructure crucial for diverting load from the Kabeli Corridor, which is anticipated to be overloaded soon, to the Koshi Corridor 220 kV transmission line, thereby enhancing

the reliability and stability of the power system. This line shall be a link for the evacuation of power effectively from the growing number of IPPs in the Kabeli River Basin.

First Erected Tower

The project will construct a 19.13 km long double circuit transmission line, which will interconnect the existing 132 kV Kabeli Corridor and the 220 kV Koshi Corridor transmission lines. The project was initiated in FY 2018/19 and is expected to be completed by the end of FY 2082/83. The estimated cost of the project is NPR 1,042 million and is jointly funded by the GoN and NEA.

Bay Civil Works at Amarpur S/S

The contract agreement for the transmission line works was signed with Cosmic Electrical Limited on 2022 October. As of July 2025, out of 67 Tower locations, 35 tower pad foundations and 2 erections have been completed. Additionally, the contract for construction of two bays each at Amarpur and Dhungesanghu Substation and 33/11 kV Substation at Dhungesanghu was signed with A.R.T Construction on 2025 March.

9. New Khimti-Lamosanghu-Kathamandu Transmission Line Up-gradation Project

The objective of this project is to increase the existing power supply system of Kathmandu Valley by upgrading the conductor of the existing 132 kV transmission lines from New Khimti to Bhaktapur via Lamosanghu 132 kV substation. It also helps to supply quality, reliable, and uninterrupted power supply in Kathmandu Valley.

The scope of the project in the first phase is to upgrade the existing 220/132 kV, 100 MVA Power Transformer by a 200 MVA Auto Transformer at New Khimti Substation. The estimated cost of the project is NPR 660 million and is jointly funded by the GoN and NEA. This project was initiated in FY 2080/081 and is expected to be completed by the end of year 2084/85. In the second phase, the replaced 100 MVA Power Transformer and associated work will be done in the unoccupied land of the same substation in future.

As of July 2025, the Contract Agreement has been completed, and the design drawing review is in progress. Similarly, the draft report with cost estimate and bidding document for the second phase is in the final stage via the consultant.

10. Surkhet Substation Project

The Surkhet 132/33 kV Substation Project has been initiated to strengthen the electricity supply system and enhance power transfer capacity to meet the growing demand in Surkhet and the broader Karnali Province. The project is estimated to cost NPR 750 million and is jointly funded by the GoN and NEA. NEA signed a contract agreement with Nepal Hydro & Electric Limited (NHE) for the execution of all project works. The project commenced in Fiscal Year 2079/80 and is scheduled for completion by September 2025.

The project scope includes the construction of the Surkhet Substation with transformer capacities of 132/33 kV, 2x30 MVA and 33/11 kV, 1x24 MVA. It also includes the installation of four

33 kV line feeders and four 11 kV line feeders to facilitate reliable distribution. These additions are expected to significantly improve the quality and reliability of the power supply in the region.

The contract agreement for the design, supply, installation, testing, and commissioning of the substation was signed under Contract No. NCB-NEA/SURKHET/SS/078/079-01 with Nepal Hydro & Electric Limited, based in Butwal. The contract was signed on May 4, 2022, became effective on June 3, 2022, and sets the completion date as August 30, 2025. The contract value is NPR 748,638,643.44, excluding taxes and duties.

As of July 2025, all major electrical works have been completed, with only testing and commissioning remaining. Firefighting systems and communication installations are also pending. In addition, miscellaneous works such as asphalt road construction and other civil works are yet to be completed.

11. Thankot – Chapagaon – Bhaktapur 132 kV Transmission Line Project

The project aims to complete the 132 kV ring main network within the Kathmandu Valley, aiming to enhance transmission capacity, improve power quality and reliability, and reduce line losses in the region. The estimated project cost is USD 23 million and is funded from the GoN and NEA.

132 kV bay foundation at Matatirtha

So far, approximately 6 km of transmission line in Kathmandu district and 4 km in Bhaktapur district have been completed. However, the construction of the remaining 18 km in Lalitpur district has been halted due to local protests, with demands for either full Right of Way (RoW) compensation or the complete relocation of the transmission line. As a result, the previous construction contract was terminated. NEA is engaging in dialogue with local stakeholders and authorities in an effort to resume and complete the remaining work, although no tangible progress has been made yet.

In preparation for charging the Chovar Substation via the Matatirtha–Chovar line section, two 132 kV line bay foundations have been completed. All necessary line bay equipment was delivered by the end of Ashad, and the Matatirtha–Chovar section is expected to be energized within the next three months.

12. Prasauni Birgunj 132kV Underground Electricity Transmission Line Project

With the rapid industrial growth in the Birgunj area, the electricity demand has significantly increased. To address this surge in load, the NEA has initiated the Prasauni–Birgunj 132 kV Underground Transmission Line Project. The project involves the construction of a 132/33 kV AIS substation at Prasauni, a Loop-In-Loop-Out (LILO) connection of the existing 132 kV Parwanipur–Raxaul transmission line, and the installation of an underground 132 kV transmission line connecting Prasauni to the new GIS substation at Birgunj. This GIS substation will also be interconnected with the existing 66/33/11 kV Birgunj substation to enhance system reliability.

The major components of the project include the development of a 132/33 kV, 2×100 MVA AIS substation at Prasauni, featuring a LILO arrangement of the Parwanipur–Raxaul line. It also involves laying 145 kV, 1Cx1200 sqmm XLPE copper underground cable between Prasauni and Birgunj substations and constructing a new 132/66 kV, 2×100 MVA GIS substation at Birgunj. The contract for the complete design and construction was awarded to M/s COVEC-CREGC-KALIKA JV.

As of July, 2025, at the Prasauni Substation, the erection and installation of equipment and switchyard components are completed, with equipment testing underway. The control building, staff quarters, and guard house have been constructed and fully equipped. Transmission tower erections are complete, and stringing works are in progress. Additional civil infrastructure such as concrete roads, drainage, PCC works, and water tanks are also being constructed. Meanwhile, all major underground transmission line tasks—including trenching, HDPE pipe laying, cable installation, joint bay construction, and trench refilling with road restoration—have been successfully completed in coordination with the local road department.

In the Birgunj Substation, the GIS building, control room, and

Prasauni Substation under construction

Road Restoration Work at Birgunj

staff quarters have been constructed, and major equipment including transformers and GIS panels has been installed. Equipment testing is ongoing, and work on concrete roads and drainage systems within both the new and existing switchyards is progressing. Once completed, this project will significantly enhance power reliability and capacity in the Birgunj industrial corridor. The overall project is expected to reach completion within Fiscal Year 2082/83 (2025/026).

GIS Extension at Birgunj Sub-station

13. Lalbandi-Salimpur 132 kV Transmission Line Project

Located in Sarlahi district the project aims to interlink the existing high-voltage corridors in the northern Terai with the southern areas through a new transmission line and substation. Specifically, the project connects the Nawalpur Substation to the southern part of Sarlahi via the construction of a new substation at Chainpura. The primary objective of the project is to improve the quality and reliability of electricity supply in northern Sarlahi by setting up a substation at Chainpura, Chakraghatta. This substation will supply power to surrounding 33/11 kV substations, including Dumariya, Malangwa, Barathawa, and Haripurwa.

The project scope includes constructing approximately 20 km of double circuit 132 kV transmission line using ACSR Bear conductor, along with the construction of a substation at Chainpura with 2×30 MVA 132/33 kV and a 1×24 MVA 33/11 kV transformation capacity. The estimated project cost is NRs. 1,258.71 million and is jointly funded by the GoN and NEA.

The contract for the transmission line and substation was awarded to Sigma Con. MSPL J/V on April 10, 2023, with completion expected by May 2026. Most of the civil works for the staff quarters and control building have been completed, with only painting, plumbing, and sanitary installations remaining. Additionally, civil works for gantry and equipment structures are nearly completed, and major substation components such as power transformers, disconnecting switches, ACSR BEAR conductor, and circuit breakers have already been delivered to the site.

As of July 2025, out of a total of 66 towers, foundations at 62 locations have been completed, and 45 towers have been erected. The land acquisition for tower pads has been completed, and compensation has been distributed to most of the landowners involved. The project is advancing steadily and is on track for its targeted completion.

Erection of Tower No. 54

14. Kushma - Lower Modi – New Modi 132 kV Transmission Line Project

The Kusma–New Modi 132 kV Transmission Line, located entirely in Parbat District, aims to boost power evacuation, reliability, and operational flexibility within the Kaligandaki Corridor. It supports the increasing electricity generation from hydropower projects in Parbat and Myagdi districts. Previously, Independent Power Producers (IPPs) struggled with power evacuation due to the lack of an adequate transmission network. A temporary solution involved constructing a 6 km, 132 kV double-circuit line (strung as a single circuit) between the Kusma 220/132 kV Substation and the Lower Modi IPP switchyard for emergency evacuation. However, this single-circuit setup restricted power flow, creating a bottleneck that reduced system efficiency.

To address this issue, the Kusma-Lower Modi-New Modi 132 kV double-circuit transmission line was envisioned to establish a ring network in the corridor.This will significantly improve grid connectivity, enhance transmission reliability, and facilitate efficient power evacuation from multiple IPPs to the national grid via the Kusma-New Butwal and New Modi-Lekhnath substations. The scope of the project comprises of stringing of 6.2 km, 132 kV 2nd circuit on the existing Kusma-Lower Modi line and also construction of 8.6 km, 132kV double circuit transmission line and 2 Nos. of 132 kV bay expansion at New Modi substation.

The contract agreement was made on 2nd November 2023 for the construction of the Transmission line and associated 132kV bay works with M/s Cosmic Electrical Limited with an amount of NPR 349.2 million. The effective date started from 28th November, 2023, with a completion time of 21 months. Progress till July 2025 includes completion of the check survey, cadastral survey, soil investigation, three tower foundations, and all civil and erection works for two bays. The second-circuit stringing on the Kusma–Lower Modi 132 kV line has also been completed. Except for tower parts, all major equipment has been supplied. Land acquisition was finalised in April 2025. Tree enumeration is complete, though a revised IEE may be required due to increased tree count. Construction of the remaining 8.5 km transmission line is pending.

New Modi 132kV Substation (with 2 Bay expansion & Foundation work

15. Nepalgunj-Nanpara Cross-Border 132 kV Transmission Line Project

The Nepalgunj–Nanpara Cross-Border 132 kV Transmission Line Project is being developed to facilitate power exchange (import/export) between Nepal and India. Currently, Nepalgunj receives approximately 12 MW of power through a 33 kV feeder from Nanpara Substation in India, operated by Uttar Pradesh Power Transmission Corporation Limited (UPPTCL), India. However, this existing arrangement suffers from technical losses and is metered only at the Indian end. To improve the reliability and efficiency of cross-border electricity trade, a 132 kV double-circuit transmission line—comprising 32 km on the Indian side and 17 km on the Nepali side—is under construction. The line will connect to the New Nepalgunj 132/33/11 kV substation, which is also currently being built.

The upgraded 132 kV transmission line will cater to the growing industrial, domestic, and irrigation demands in Nepalgunj and nearby cities including Kohalpur and Gulariya. This strategic infrastructure will not only improve supply quality but also

Sub Soil Exploration Works for Tower Foundation

Cadastral Survey Works with Napi officers at Tower No. 2

enhance the capacity for bilateral energy cooperation. The project was started in Fiscal Year 2079/80, and the contract for the Nepali portion was awarded to M/s Mudbhary & Joshi Construction Pvt. Ltd. on 28 February 2024.

The scope includes the construction of a 17 km-long double-circuit 132 kV line using ACSR BEAR conductor, along with the installation of two 132 kV bay extensions at the New Nepalgunj Substation. As of July 2025, key preliminary activities including the check survey, plan-profile preparation, tower spotting, cadastral survey, and geotechnical investigations have been successfully completed. In addition, design and drawing approvals have been granted for both the transmission line components (such as towers, conductors, OPGW, CLRI, and hardware fittings) and the bay extension equipment (including SF6 circuit breakers, CVTs, CTs/PTs, lightning arresters, and disconnectors). The conductors have already been delivered to the project site, marking readiness for the next phase of implementation.

With work progressing steadily and most preparatory milestones achieved, the project is expected to be completed before May 2026. Upon completion, it will significantly strengthen cross-border power exchange capabilities and contribute to improved energy security, grid stability, and economic development in the western region of Nepal.

16. Godak-Soyak 132 kV Transmission Line Project

The project is conceptualized to make the LILO arrangement in the second circuit of the Damak-Phidim transmission line and to connect with the existing Godak Substation. The purpose of the project is to improve the grid stability. The project cost is estimated to be NPR 553.4 million and is jointly funded by the GoN and NEA.

The scope of the project includes the construction of a 6.61 km long double circuit 132 kV transmission line with an ACSR Bear conductor. A contract agreement was signed with Vector Triple S. JV in October 2023. As of July 2025, out of a total of 26 towers, foundation works of 14 tower pads have been completed so far. The erection work has not started yet. The preliminary report for Land Acquisition has been submitted to the District Administration Office.

17. Bafikot-Khungri 132 kV Transmission Line Project

The objective of this project is to reinforce the power supply system and power evacuation from different IPPs at Rolpa, Rukum (east), and (west) districts and its tributaries and it will also interconnect Rolpa and Rukum district with Interconnected Nepal Power System (INPS).

The project comprises of construction of about 75 km long 132

kV double circuit Transmission Line from Khungri substation (Rolpa) to Uttarganga substation Hub, Bafikot (Rukum) along with one 132/33/11 kV, 16/20 MVA substation at Ghartigaun, Rolpa. Which crosses various municipalities/VDCs of Rolpa, and Rukum (west).

The contract for construction of the transmission line has been made with SIGMA CON.-KRRTPPL JV. The Check survey is already started and preparation for the soil investigation of the Tower pad is initiated. The pre-design work is underway.

Started from FY 2076/77 the expected completion date is FY 2084/85. The initial project cost is US $ 35 Million.

18. Singati 132 kV Substation Capacity Upgradation Project

The major scope of this project, jointly funded by NEA and GoN, is to upgrade the existing 132/33 kV Singati substation by addition of a transformer bay and a 33 kV line bay. The capacity of the 132/ 33 kV transformer to be added shall be 24/30 MVA.

The contract agreement was signed on 14 June 2024 with contractor M/S URJA (Urja International (P.) Ltd.)-EEE (Eastern Electrical Enterprises) J/V for Design, Supply, Construction, Installation, Testing, and Commissioning of Singati 132/33 kV Substation Capacity Upgradation with the contract being effective from 30 July 2024.

Most of the major electrical equipment necessary for the upgradation work have been delivered to project site and the Civil works have been completed.

Projects under Planned and Proposed

1. Lahan - Sukhipur 132 kV Transmission Line Project

This project, jointly funded by the GoN and NEA is initiated to cater loads of 33/11 kV substations to improve voltage profile and reduce loss in Siraha district.

The scope of the project includes the construction of about 17 km long, double circuit 132 kV transmission line with ACSR Bear conductor and construction of 132/33 kV, 2x63 MVA & 132x11 kV, 24 MVA substation at Badahari, Sukhipur Municipality – 6 of Siraha district. The proposed line will originate from the existing Lahan substation and will be connected to the proposed Sukhipur substation. This substation will feed Siraha, Bisanpur, Maruti cement, and Bhagwanpur 33/11 kV substations.

All study related work has been completed. Construction of boundary wall at Sukhipur substation has been completed. The preparation of cost estimates and tender documents for the line and substation is currently in progress. The tendering process is scheduled to be conducted in the fiscal year 2082/83.

2. Rupani – Bode Barsain 132 kV Transmission Line Project

This project, jointly funded by the GoN and NEA is initiated to cater loads of 33/11 kV substations to improve voltage profile and reduce loss in Saptari district.

The scope of the project includes the construction of about 18 km long, double-circuit 132 kV transmission line with ACSR Bear conductor and the construction of 132/33 kV, 2x30 MVA substation at Bodebarsain Municipality – 3. The proposed line will originate from the existing Rupani substation and will be connected to the proposed Bodebarsain substation. This substation will feed Bodebarsain, Bisanpur, Rajbiraj, Pansera, and other proposed 33/11 kV substations.

All study related work has been completed. Construction of boundary wall at Sukhipur substation has been completed. The preparation of cost estimates and tender documents for the line and substation is currently in progress. The tendering process is scheduled to be conducted in the fiscal year 2082/83.

3. Chandrapur - Sukhdevchauk 132 kV Transmission Line Project

This project focuses on developing a 37 km long, double-circuit 132 kV transmission line and a 132/33/11 kV substation at Saruatha in Yamunamai Rural Municipality Ward No.4 in the Rautahat district. The initiative aims to address the increasing power demands of industrial consumers by improving voltage stability and reducing outages and tripping in the region. The new transmission line will start from the existing NEA Chandranigahpur 132 kV Substation and connect to the proposed Saruatha substation, which will support the Gaur, Manpur, and Maulapur substations.

As of July 2025, the project has completed its detailed feasibility, IEE, and geo-investigation studies. Land acquisition for the Saruatha substation is finalized, and construction of the boundary wall and guard house with a store building is completed. With the financial assistance of the GoN and NEA the project is expected to float the bid in FY 2082/83.

4. Urban Transmission and Distribution System Improvement Project

The Urban Transmission and Distribution System Improvement Project, is supported through a loan from the Japan International Cooperation Agency (JICA) under Loan No. NE-P13. The project aims to enhance the reliability and capacity of Nepal's distribution and transmission infrastructure in urban areas. One of the major components of this initiative is the Kathmandu Valley System Reinforcement Sub-Project, which targets vital system upgrades in both Kathmandu and Bhaktapur districts whereas the other is Pokhara Biruta 132/11 kV Substation Sub-Project which taregets to reinforce the power supply system of the Pokhara Valley by enhancing its transmission and distribution infrastructure.

4.1 Kathmandu Valley System Reinforcement Project

This sub-project involves the construction of multiple 132/11 kV GIS substations at key strategic locations: the existing Maharajgunj, Rajdurbar, K-2, K-3, and Thapathali 11 kV Switching stations and at Sirutar. It also includes the construction of a 132 kV double-circuit underground transmission line from Balaju–Maharajgunj–Rajdurbar–K2–K3. Similarly, in Bhaktapur, an underground 132 kV line will be built from the Bhaktapur substation to Katunje terminal tower, which will then connect to the existing overhead segment of the Thankot–Chapagaon–Bhaktapur 132 kV line. From Sirutar terminal tower to the proposed Sirutar GIS substation, another underground section will be constructed. Line bay extensions are also included at Balaju GIS and Bhaktapur AIS substations.

A separate transmission segment involves the Teku to Thapathali corridor, where the line will initially be underground from the Teku substation to a terminal tower near Teku Dovan, then run overhead using monopole towers until Tukucha River/ Kalmochan Mahadev Temple, and finally return underground up to the proposed Thapathali substation. The detailed design and construction supervision for the entire sub-project have been awarded to M/s Nippon Koei Co. Ltd., Japan, in association with Total Management Services, Nepal. The consultancy agreement became effective on 15 March 2024, and design work is currently in progress.

As of July 2025, due to budget limitations under the JICA loan, not all originally proposed packages will be implemented during this phase. Only the 132 kV Balaju–Maharajgunj–Rajdurbar–K2–K3 underground transmission line and associated substations at Maharajgunj, K-2, and K-3 will be executed for now. The Initial Environmental Examination (IEE) for this section has already been approved, and an application for the construction license has been submitted. The project cost estimate has also received approval, and bidding document preparation is currently underway. The consultant has submitted the draft Basic Design Report and Employer's Requirements for review, and the project is in the process of evaluating and providing feedback.

4.2 Pokhara Birauta 132/11 kV Substation Project

This project aims to strengthen Pokhara Valley's power supply by upgrading its transmission and distribution network. The new substation will be built in Ward No. 17 of Pokhara Metropolitan City, southwest of the existing Pokhara substation and close to the Lakeside area—a major urban and tourist hub.

The project involves constructing a 132/11 kV, 30×2 MVA indoor GIS substation, which will link to the Syangja–Lekhnath 132 kV transmission line via loop-in and loop-out (LILO) connections. Around 600 meters of 132 kV underground cable will be laid from the substation to Tower No. 159 of the transmission line. Additionally, 11 kV outgoing feeders will be extended to suitable connection points to reinforce the existing distribution system.

Land for the LILO tower has already been acquired, and the Initial Environmental Examination (IEE) has been approved. Nippon Koei Co., Ltd. (Tokyo, Japan) serves as the project consultant. The construction tender is expected to be issued in the fiscal year 2082/83 (2025/26), with funding provided by the Japan International Cooperation Agency (JICA).

5. Syaule Sanfebagar 132 kV Transmission Line Project

The objective of the project is to to improve the quality and reliability of electricity supply to the consumers of the Achham, Doti, Bajhang, and Bajura districts of Sudur Paschim province along with increasing the consumption of electricity by promoting domestic industries.

The scope of the project includes the construction of about 70 km 132 kV double circuit transmission line from existing Syaule substation to Bayalpata in Sanfebagar Municipality in Achham district and construct a new 132/33/11 kV sub-station in Bayalpata in Sanfebagar Municipality.

As of July 2025, the Detail Feasibility Study of the project is completed.

6. Auraha Simara 132kV Transmission Line Project

This is a strategic infrastructure initiative aimed at strengthening the power transmission system in the Bara district, with a special focus on supporting the rapidly developing Special Economic Zone (SEZ) in Simara. Given the growing industrial demand in the area, the project seeks to enhance the reliability, capacity, and quality of electricity supply in the Simara-Dumarwana region and the north-eastern corridor of the Bara district.

The primary objectives of the project is meeting the growing industrial power demand in the Simara Special Economic Zone (SEZ), enhancing the reliability and quality of electricity supply in Pathlaiya, Simara, Dumarwana, and surrounding areas, and alleviating the load on the existing 66 kV network in the Pathlaiya–Parwanipur section.

The total cost of the project is estimated to be around NPR 1350 million.

The main components of the project include the following:

- 132kV Multi-Circuit (Four Circuit) Transmission Line: Construction of approximately 3 km of 132kV multi circuit (four circuit) transmission line using BEAR equivalent High-Temperature Low Sag (HTLS) conductors. This line will be used for loop in loop out arrangement of existing 132kV Pathlaiya Parwanipur double circuit line at the proposed Auraha AIS Substation.
- New AIS Auraha 132/33/11kV Substation: Construction of new Air Insulated Substation at Auraha with 1×30 MVA, 132/33kV and 2×22.5 MVA, 132/11kV transformers

As of July 2025, the detailed survey, feasibility works and the IEE study is completed. A Memorandum of Understanding (MoU) has been signed between the NEA and Special Economic Zone Authority (SEZA) for the development of substation infrastructure in the Simara SEZ area. As per the MoU, NEA shall be responsible for the construction of the 132kV transmission line and associated substation infrastructure within the Simara Special Economic Zone. The project will be funded by SEZA, while NEA will serve as the implementing agency, overseeing the planning, design, and execution of the works.

7. Damak Keraun Biratnagar 132kV Transmission Line Project

The Damak–Keroun–Biratnagar 132 kV Transmission Line Project has been proposed to strengthen the reliability and resilience of the Integrated Nepal Power System (INPS) in the eastern region by creating a robust transmission link between the Damak and Biratnagar substations. Currently, only a single 132 kV line with BEAR conductor connects the Duhabi and Damak substations, making the eastern segment of the INPS highly vulnerable—any fault along this line leads to the complete isolation of the region, severely affecting power stability. To mitigate this risk, the proposed transmission line aims to establish an alternative pathway, ensuring reliable and uninterrupted power evacuation from the eastern generation sources. Once completed, the project will significantly improve the quality and consistency of power supply for industrial and residential consumers in Damak, Biratnagar, Duhabi, and nearby areas.

The main components of the project include the following:

- The initial segment of the proposed double-circuit transmission line, spanning approximately 32 km, is slated for construction from the existing Damak (Padajungi) 132/33/11kV Substation in Damak, Jhapa, to the Keroun 132/33/11kV Substation, currently under construction in Kanepokhari Gaupalika, Morang District. The subsequent section, covering approximately 40 km, will be constructed from the Keroun 132/33/11kV Substation to the Biratnagar 132/33/11kV Substation in Barju, Sunsari District. Notably, Out of total 72 km, a 2.5 km underground transmission line will be installed at the inception point at Damak Substation, and a 3 km underground transmission line will be integrated within the section between Keroun and Biratnagar in order to bypass Biratnagar city areas.
- Two number of 132kV line bays extension works shall be carried out in each substation (Damak, Keroun and Biratnagar).

As of 2025 July, the detailed survey and feasibility study is completed, however final report is yet to be received. Initial Environment Examination (IEE) study is on progress, Terms of Reference (TOR) report has been submitted to Department of Electricity Development (DOED) for approval.

8. Attariya-Dhangadi 132 kV Transmission Line Project

The objective of this project is to enhance the power supply system and increase the quality, and reliability of power supply to industrial, commercial, and domestic consumers of Dhangadi

Sub-Metropolitan in Kailali district. This project is initiated in FY 2080/81 with the funding by the GoN.

The scope of the project includes the construction of a 15.5 km long 132 kV double circuit transmission line from the existing Attariya 132 kV substation to a new 132 kV substation in Dhangadi with ACSR BEAR Conductor in a steel lattice structure and 1.5 km underground cable transmission line with 800 Sq. mm, XLPE cable. The new 132/33/11 kV substation shall be constructed at Dhangadi with 132/33 kV, 2x 63 MVA and 33/11 kV 16 MVA, 3 phase power transformer and 2 numbers of 15 MVAR Capacitor Bank.

As of July 2025, the survey License has been issued from the DoED. The detailed feasibility study and survey have been completed. The IEE works for the project has been completed.

9. Dhaubadi – Meghauli 132kV Transmission Line Project

The project has been initiated to strengthen the power supply infrastructure in the eastern region of Nawalparasi (Ba.Su.Pu.) and the western part of Chitwan district by improving reliability, capacity, and system security. It involves the construction of approximately 15 km of 132 kV double-circuit transmission line using ACSR Cardinal Conductor, linking the Gaidakot and Meghauli substations. The project also includes the development of two new substations—Gaidakot and Meghauli—each designed as a 132/33/11 kV facility equipped with 2×30 MVA, 132/33 kV transformers to support power distribution needs in the region.

As of July 2025, the feasibility study and Initial Environmental Examination (IEE) have been completed, and geotechnical investigations along with land acquisition for the Meghauli Substation have been finalized. Construction works, including the boundary wall and guard house at the Meghauli site, are currently underway. The construction license was issued in April 2025. The forest land clearance and tree-cutting approval are still under process. The total estimated project cost is approximately USD 20 million, and the funding agreement with KfW is currently under negotiation.

10. Godak – New Anarmani Transmission Line Project

Godak Anarmani 132 kV Transmission Line Project is being implemented from Fiscal Year 2075/76 (2018/19 AD) under the joint investment of the GoN and NEA. The main objective of the project is to reinforce the integrated Nepal power system in the eastern region of Nepal. Godak Anarmani's 132 kV Transmission Line Project is intended to reinforce the power supply system in the eastern region of Nepal. The Proposed New Anarmani Substation shall be constructed up to 400 kV voltage level and shall be a hub for energy trade towards eastern India and Bangladesh.

The project includes the construction of a Double Circuit 132 kV Transmission Line from the existing Godak Substation to the Anarmani substation and the construction of a Double Circuit 132 kV Transmission Line from the proposed New Anarmani Substation to the existing NEA Anarmani Substation. The scope also includes the acquisition of land in Jhapa sufficient to accommodate the proposed 400 kV level substation under the Arun-Inaruwa-Tingala-Mirchaiya 400 kV Transmission Line Project and the construction of 132/33/11 kV New Anarmani Substation.

II. High Voltage Grid Development Department

This department is headed by a director and is responsible for planning, designing, constructing, supervising, and monitoring new transmission line and substation projects of 220 kV and above voltage level.

A summary of the projects being executed by this department is presented below:

Projects under Construction

1. Koshi Corridor 220 kV Transmission Line Project

The Koshi Corridor 220 kV Transmission Line Project aims to evacuate electricity from various hydropower projects located in the Arun and Tamor river basins—particularly in the districts of Sankhuwasabha, Bhojpur, Taplejung, Panchthar, and Terhathum within Koshi Province, Nepal—and to strengthen NEA's transmission and distribution network in eastern Nepal. The project is primarily financed by EXIM Bank of India under its Line of Credit II (USD 250 million), with USD 90 million earmarked for this transmission scheme; the balance is covered jointly by the GoN and NEA. M/s WAPCOS Limited (India) serves as the consultant of the project.

Package KC1 involved construction of a 107 km, double-circuit 220 kV transmission line from Tumlingtar to Inaruwa via Baneshwar and Basantapur in Sankhuwasabha District. Towers are configured vertically for two circuits: the Tumlingtar–

Baneshwar–Basantapur segment carries twin ACSR Moose conductors, while Basantapur–Inaruwa carries quad ACSR Moose conductors (with the provision of stringing only one circuit initially). The contract was awarded to Kalpataru Projects International Limited in June 2016 at a contract value of USD 39.227 million. This section overcame COVID-19 lockdowns, forest-clearance delays, and right-of-way challenges, and was commissioned at 220 kV on August 4, 2022, with its Defect Liability Period closing on February 5, 2024. The capitalization of this package KC1 has been successfully concluded.

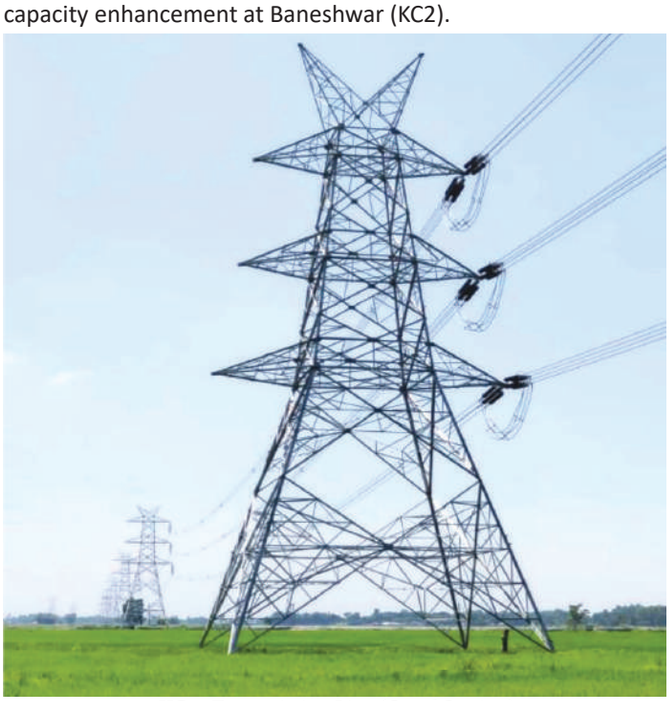
Package KC2 comprised construction of three new 220 kV AIS substations—Tumlingtar, Baneshwar, and Basantapur—and two additional 220 kV line bays at Inaruwa substation. The scope included the construction of 220/132/33kV substation at Tumlingtar, Sankhuwasabha District with two banks of 100 MVA, auto transformers formed with 7 numbers of 220/132 kV, 33.33MVA single phase auto transformers and two numbers of 30 MVA, 132/33 kV, 3 phase power transformers; construction of 220/33kV substation at Baneshwar, Sankhuwasabha District with two numbers of 30 MVA, 220/33 kV, 3 phase power transformers, construction of 220/132/33kV substation at Basantapur, Sankhuwasabha District with two banks of 100 MVA, auto transformers formed with 7 numbers of 220/132 kV, 33.33MVA single phase auto transformers and one numbers of 30 MVA, 132/33 kV, 3 phase power transformer and construction for two numbers of 220kV line bay extension at Inaruwa Substation. This package was awarded to M/S Larsen & Toubro Ltd. in October 2018 with value USD 25.126 million. Despite pandemic-related lockdowns, extreme weather, and rugged terrain, Tumlingtar, Baneshwar, and Inaruwa substations were completed and are in operation at 220 kV voltage level since August 4, 2022, and Basantapur substation was succedingy commissioned in December 2023.

Package KC3 covered the construction of 35 km 220 kV line from Dhungesanghu substation (Taplejung) to Basantapur substation along with construction of a 132/33 kV AIS Substation at Dhungesanghu, which includes two banks of 15 MVA transformers formed with seven numbers of 132/33 kV 5 MVA single-phase units. Towers were designed for Twin ACSR Moose conductors, with single-circuit stringing (second circuit done through package KC4). Awarded to KEC International Ltd., India in June 2018 for USD 21.410 million, this package faced remote-access difficulties, bad weather conditions, huge earthworks, and forest-clearance hurdles. By April 2024, all 127 towers were erected and the first circuit strung and is evacuating 73 MW from Sanima Middle Tamor HEP at 220 kV. The Dhungesanghu substation, later completed under KC4, was commissioned on July 6, 2025.

Package KC4 comprised second-circuit stringing of the Basantapur–Dhungesanghu line and construction of four new 220 kV line bays plus two tie bays at Basantapur Substation. The package was awarded to Nepal Hydro & Electric Limited in November 2022 (NPR 660.8 million). All design, supply, and installation works are successfully completed. The transmission line section was commissioned on June 7, 2025; three bay extensions at Basantapur were completed on April 10, 2024, whereas the remaining three were completed on July 10, 2025.

The entire current scope under the Koshi Corridor 220 kV Transmission Line Project (KC1, KC2, KC3 and KC4) have been commissioned. Further, Package KC5 is proposed to be funded by EXIM Bank of India. 35 MUSD is proposed to be earmarked for this package.

Package KC5 will include (i) second-circuit stringing of the Inaruwa–Basantapur–Baneshwar–Tumlingtar line (KC1), (ii) GIS-132 kV expansion at Dhungesanghu (KC3), (iii) one 220 kV bay at Tumlingtar (KC2), and (iv) two 220 kV bay extensions and capacity enhancement at Baneshwar (KC2).



KC-1 Transmission Line (Quad Section)

KC-3 Dhungesanghu Substation

KC-3: Transmission Line Stretch from Basantapur to Dhugesangu Section

2. Lekhnath-Damauli 220 kV Transmission Line Project

The primary objective of this project is to strengthen the power evacuation capacity of Nepal's Integrated Power System in the Gandaki region. This will be accomplished through the construction of a 45 km long, 220 kV double-circuit transmission line with MOOSE ACSR conductor, linking the Lekhnath Substation in Pokhara (Ward No. 27) to the new Damauli Substation in Byas (Ward No. 13). The project also includes the construction of two high-voltage substations at these locations to ensure efficient integration and delivery of power to the national grid.

The project scope is divided into two major packages. Package A pertains to the transmission line component and involves the construction of a 220 kV double-circuit overhead line between Lekhnath and Damauli. It also includes Loop-in-Loop-out (LILO) connections—one for integrating the Tanahu Hydropower 220 kV overhead line into the new Damauli Substation and another for linking the existing Old Damauli–Bharatpur 132 kV line. Package B involves substation works and includes the construction of the 220/132 kV (6x105 + spare 1x105 MVA) GIS substation at existing 132 kV Substation Lekhnath and also, construction of the new 220/132 kV (2x63 MVA), 132/33 kV (2x30 MVA), 33/11 kV (2x8 MVA) GIS Substation at Damauli.

The total estimated cost of the project is USD 90 million, jointly financed by the GoN and the Federal Republic of Germany through KfW (German Development Bank). Of the total, EUR 49 million will be provided as a grant by KfW, while the remaining amount will be covered by GoN and NEA. The project is scheduled to be completed within Fiscal Year 2084/85. M/s FICHTNER GmbH of Germany has been engaged as the Procurement and Implementation Consultant (PIC) to oversee the smooth execution of both technical and procurement aspects of the project.

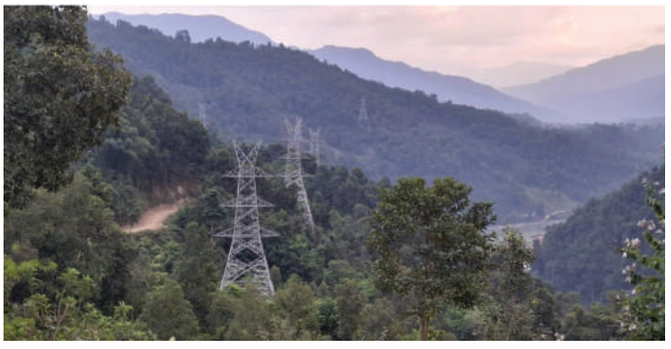
Construction of Bridge over the Chhabdi River

As of July 2025, notable progress has been achieved, particularly in enabling works. The access road to the Damauli substation site, the bridge over the Chhabdi River, and the substation office building have been completed. The contractor M/S KEC International Ltd. (India) selected for Package A, has completed most design and engineering tasks. Soil investigations and cadastral surveys are underway, while material testing is finished for major components, and a large portion of ACSR conductors has already been delivered to the site. Land acquisition for private holdings and approvals for forest land usage are currently in process. For Package B, M/S Siemens Limited, India was selected for the construction of substations on 21 May 2025 and has begun check survey activities, with a 24-month project completion timeline.

Construction of office building at New Damauli Substation

3. Tumlingtar-Sitalpati 220 kV Transmission Line Project

The primary goal of the Tumlingtar–Sitalpati 220 kV Transmission Line Project is to expand the Integrated Nepal Power System (INPS) at the 220 kV level from the existing Tumlingtar Substation to the proposed Sitalpati Substation. Once operational, Sitalpati is expected to function as a future hub for evacuating power from hydropower projects in the Arun River basin, covering areas of Sankhuwasabha and Bhojpur districts. In the interim, it will also serve to collect power from local Independent Power Producers (IPPs) and transmit it to Tumlingtar Substation, where the existing Koshi Corridor 220 kV infrastructure can be utilized for further evacuation. The project, estimated at NPR 4,482 million, is jointly funded by the GoN and NEA. It was commenced in August 2022 and is scheduled for completion by April 2026.



Tower AP11/0 to AP17/0

The scope of the project includes three key components.

- Construction of ~14km long 220kV Twin Moose ACSR D/C Transmission Line from Tumlingtar SS to Sitalpati SS
- Construction of 220kV(GIS)/132kV/33/11 kV AIS substation at the Sitalpati Substation with 220/132 kV, 400 MVA (6*66.67 MVA+ 1*66.67 MVA) single phase bank; 132/33 kV, 2*24/30 MVA three phase transformer and 33/11 kV, 2*6/8 MVA three phase transformer
- Construction of 2 nos. of 220kV line-bay extensions at the existing Tumlingtar Substation

The contract for executing the entire scope was awarded to M/s Kalpataru Projects International Limited (formerly Kalpataru Power Transmission Ltd.), India. The contract became effective on November 7, 2022. As of June 2025, major progress has been made: all 39 transmission line tower foundations have been completed and 32 towers erected. However, the remaining tower erection and conductor stringing are delayed due to pending forest clearance approvals. At the Sitalpati Substation, key infrastructure such as the control room, switchyard panel rooms, and 11 kV indoor building have been constructed, and finishing work is ongoing. Foundations for the gantry structures, the 8 MVA transformer, and most equipment are complete, whereas 5 of the 9 transformer foundations are still under construction.

8MVA Transformer

At the Tumlingtar Substation end, the gantry and associated equipment foundations have been fully completed. Design and engineering works for both the transmission line and substations are nearing completion. On the supply front, all required materials for the transmission line have been delivered and stored at site. Approximately 70% of the substation materials have also been received. With civil works ongoing and much of the foundational work completed, the project is progressing steadily toward its target completion date in April 2026, with pending resolution of forest clearance issues.

220kV GIS Building Completed upto Plinth Level

4. Trishuli 3B – Ratmate – Galchhi 220 kV Transmission Line Project

The Trishuli 3B–Ratmate–Galchhi 220 kV Transmission Line Project aims to strengthen the electricity transmission infrastructure toward Kathmandu Valley through two key segments: Galchhi–Ratmate and Trishuli 3B–Ratmate. The Galchhi–Ratmate line is a crucial component identified for reliable power delivery to the valley, supplementing the existing Marsyangdi–Kathmandu 220 kV line, which currently transfers power from Marsyangdi Power Station to the Matatirtha Substation. The primary objective of the project is to transmit enhanced and uninterrupted power supply from the under-construction Ratmate Substation to Kathmandu and Bharatpur. Concurrently, the Trishuli 3B–Ratmate segment plays an essential role in evacuating additional power from the Trishuli 3B Hub Substation to the same Ratmate Substation with enhanced reliabitlity. The project is jointly financed by the GoN and NEA, while the 400/220 kV Ratmate Substation in Nuwakot is being developed separately by MCA Nepal.

The Galchhi–Ratmate section of the project includes the construction of an 8.5 km long four-circuit 220 kV transmission line using Twin MOOSE ACSR conductors. This segment features a Loop-in-Loop-out (LILO) connection to the existing Marsyangdi–Kathmandu 220 kV line at Galchhi and connects to the new Ratmate Substation. This section is designed to increase redundancy and improve the reliability of power supply to Kathmandu, especially under high demand or contingency conditions.

The Trishuli 3B–Ratmate section comprises a 24 km long double-circuit 220 kV line, also with Twin MOOSE conductors, extending from the Trishuli 3B Hub Substation to the Ratmate Substation. This portion is vital for evacuating power generated in the Trishuli corridor and transmitting it efficiently into the central grid. In addition to the transmission line, the work includes the construction of bay extensions at the Trishuli 3B Hub Substation and Ratmate Substations to accommodate the new line integration. Together, both segments aim to form a robust transmission corridor with direct connectivity from upstream hydropower zones to central load centers.

The contract for the Galchhi–Ratmate 220 kV line was awarded to M/s SIGMA CON.–KRRTPPL JV on 27 May 2024, at a contract value of USD 9.23 million. Chilime Engineering and Services Company Ltd. has been appointed as the construction supervision consultant. As of July 2025, major preparatory works such as the check survey, tower schedule, and plan-profile drawing have been completed, while tower design approvals are nearing finalization. For the Trishuli 3B–Ratmate section, the survey license has been secured, and the transmission license application has been submitted to the Department of Electricity Development (DOED). The Initial Environmental Examination (IEE) is currently being updated to fulfill regulatory requirements before construction activities proceed further.

Projects under Planned and Proposed

1. Dhaubadi Iron Mines Electricity Transmission Line Project

The objective of this project is to supply reliable and sufficient power for the proposed Dhaubadi Iron Industry in the Nawalparasi (East) district as well as to improve the power supply system in Kawasoti, Devchuli, and Mandhyabindu Municipality through interconnection of existing Kawasoti 132kV substation. The source of funds for executing the project is managed by GoN and the project is expected to enter into the construction stage in FY 2082/83 after the Dhaubadi Iron Company completes its feasibility, environment, and mining study and decides on the construction of the Iron Industry at the location.

The scope of the project is to construct the Dhaubadi 220/132/33 kV Substation connecting to the New Bharatpur-New Butawal 220kV transmission line by 220kV twin-Bisson ACSR conductor in a four-circuit tower through LILO arrangement. The substation shall also be connected to the Bharatpur-Bardaghat 132kV transmission line by a 132kV Panther conductor in a double

circuit tower through the LILO arrangement. The total length of the transmission line shall be about 4.52 km. The substation shall be equipped with two 100MVA three-phase 220/132kV transformers. The total cost of the project is around NPR 1440 million and the fund for the construction of the project has been allocated by GoN through the Ministry of Industry, Commerce and Supplies.

As of July 2025, the feasibility study and the environmental study (IEE) of the project are completed. The preparation of tender documents for the transmission line part and the process of getting land for the substation area are in progress. The construction of the transmission line and substation is planned to begin in fiscal year 2082/83.

2. Dharan 220/33 kV Substation Project

Dharan and its surrounding areas hold significant potential for the growth of industrial and commercial sectors. However, the existing 33 kV power supply from Duhabi is not sufficient to meet the increasing demand. To address this issue and ensure a stable and reliable power supply, the construction of a high-voltage substation in Dharan has been planned. Initiated in fiscal year 2076/077, the project is estimated to cost USD 19 million, with funding anticipated from the Exim Bank of India. The tendering process has experienced delays primarily due to the lack of secured funds. Upon securing financial resources, the project is expected to be completed within two and a half years.

The scope of this project includes construction of 220kV (GIS)/33/11 kV AIS (Indoor) substation at Dharan by Loop-in-Loop-out (LILO) facility with double circuit Quad ACSR Moose to the existing Koshi Corridor 220kV Transmission Line. 220/33 kV, 3*25/30 MVA three phase and 33/11 kV, 2*16 MVA three phase transformers have been proposed with the construction of Multi-circuit Dead end tower for LILO arrangement. Also, the capacity enhancement of existing 220/33 kV, 2*25/30 MVA three phase transformer at Baneshwar, Sankhuwasabha with the 220/33 kV, 2*63 MVA three phase transformers will be under this scope of work.

As of July 2025, several key preparatory works have been completed. These include the topographical survey and soil investigation of the proposed substation site, as well as obtaining the Initial Environmental Examination (IEE) approval from the Department of Electricity Development (DOED). Moreover, construction of the staff quarters and the boundary wall for the substation premises has also been completed.

3. Palpa 220 kV Substation Project

The GoN has applied to secure a Dollar Credit Line Agreement with the Export-Import Bank of India to finance the construction of a 220/132/33 kV substation in Bagnaskali Rural Municipality, Ward No. 1, Palpa District. This substation will feature a 220 kV Gas Insulated System (GIS) and 132 kV and 33 kV Air Insulated Systems (AIS). It is planned at Maadi Phaat, the central point for both the 220 kV Kushma–New Butwal and the 132 kV Kaligandaki double-circuit transmission lines. Located approximately 38 kilometers north of Butwal and 63 kilometers south of Bhairahawa International Airport, this facility will play a key role in strengthening Nepal's power infrastructure by enhancing reliability and power distribution capability.

The estimated cost of the project is around NPR 3,092 million, with an expected completion time of 30 months. The scope of work includes six 220 kV bays—two each for the Kushma-Palpa and Palpa–New Butwal lines, plus two spare bays. It will also include seven 66.66 MVA single-phase auto-transformers (forming two banks of 200 MVA, including one spare), two 63 MVA 3-phase 132/33 kV transformers, and two 8 MVA transformers. The substation will be supported by key infrastructure such as control buildings, staff quarters, transit camps, and comprehensive switchyard facilities at all voltage levels.

As of July, 2025, the project has completed key preparatory works including the Initial Environmental Examination (IEE), survey, and soil investigations. Land acquisition is nearly complete, with about 95% price for acquisition distributed and 94% of demarcation finalized. To optimize the timeline, construction of staff and security facilities under National Competitive Bidding has begun in parallel with the finalization of International Competitive Bidding documents. Given its significant 526 MVA evacuation capacity, the substation is crucial for improving the electricity supply reliability and boosting the industrial and economic growth of Butwal, Bhairahawa, and surrounding districts including Palpa, Gulmi, Syangja and Arghakhanchi.

4. Kathmandu Valley Transmission System Expansion Project

The Kathmandu Valley Transmission System Expansion Project has been planned to meet the rapidly increasing electricity demand in Kathmandu Valley and Banepa city of Kavrepalanchok

District. The project comprises five packages involving the construction of new substations, upgrading existing ones, and building transmission lines totaling 160.21 km across different voltage levels including 66 kV, 132 kV, and 220 kV. Based on energy demand forecasts for the years 2030, 2040, and 2050, the project aims to fulfill the growing demand through expansion, upgrading, and extension of substations and transmission lines.

The study estimates the peak electricity demand in Kathmandu Valley will reach 925 MW by 2030, 1,825 MW by 2040, and 3,169 MW by 2050. To meet this increasing demand, NEA plans to construct new substations and transmission lines under this expansion project. The project is divided into five packages—Package A, Package B, Package C, Package D, and Package E—to facilitate phased implementation and timely completion.

Due to limited land availability and high land costs in prime areas of Kathmandu Valley and Banepa city, the substations are designed as GIS type. Transmission lines will include overhead, monopole, and underground types as recommended by the study to address technical and spatial constraints. Approximately 441 ropani of land will be required to be acquired for the construction of the GIS substations.

The study estimates that the total investment required for constructing new substations and transmission lines, as well as upgrading existing facilities, will be around USD 520 million. This investment aims to ensure a reliable and sufficient power supply to meet Kathmandu Valley's growing energy needs well into the mid-21st century.

i) Package A:

Under Package A, new substations are to be constructed at Balkot, Goldhunga, Bagdol, and Harsiddhi. In addition, the project will build underground transmission lines (UGTL) from the proposed Ratnapark substation to Thapathali and from Sirutar to New Patan, passing through the proposed Harsiddhi substation.

Furthermore, the project also involves the upgrading of existing 66 kV transmission lines from Teenpiple to Okhaltar and from Teenpiple to Balaju by replacing the conductors with high-temperature low-sag (HTLS) systems to enhance capacity and efficiency. These works are expected to contribute significantly to the reliability and safety of the valley's electricity infrastructure. The project has already initiated tender procedures for the construction of a boundary wall at the Balkot substation, and this work is targeted to be completed within fiscal year 2082/83.

Regarding land acquisition, plots for Goldhunga and Harsiddhi substations have been secured, while the acquisition process for Bagdol substation is currently ongoing. Environmental studies for both proposed underground transmission lines are in progress. Moreover, the detailed feasibility studies for these UGTL routes have been completed, and tender processes for their implementation are planned to begin in the next fiscal year.

ii) Package B:

Package B of this project includes the Teenpiple–Balaju 132 kV transmission line, the Teenpiple–Kapan Gumba–Lapsiphedi 220 kV transmission line, and the construction of three substations at Tokha, Dahachowk, and Kapan Gumba. The Teenpiple–Balaju 132 kV line is a ~6 km high-capacity, four-circuit HTLS line that starts at the Teenpiple substation and connects to the Balaju–Futung corridor through a special LILO tower. The design and feasibility studies for this line are complete, and the Environmental Impact Assessment (EIA) process is now underway.

Another major component is the Teenpiple–Kapan Gumba–Lapsiphedi 220 kV double-circuit transmission line, comprising two 13 km segments designed to form a robust 220 kV ring around the valley. This line has also completed feasibility studies and entered into the EIA phase. Central to this network is the upcoming Kapan Gumba 220/132/11 kV GIS substation, planned in two stages: the first stage includes a 132 kV configuration with two 45 MVA transformers and a LILO connection from the Chapali–Mulpani line; the second stage will upgrade the facility to 220 kV by adding two 160 MVA transformers and connecting to the Teenpiple–Lapsiphedi segment through a ~4 km multi-circuit line.

To further support load management and strengthen the urban power grid, NEA has proposed two additional 132/11 kV GIS substations at Tokha and Dahachowk. The Tokha substation will connect via LILO to the Balaju–Chapali 132 kV line and has completed land acquisition and feasibility studies. It is currently awaiting financial closure, with proposals under review by international lenders such as the World Bank and AIIB. The Dahachowk substation, linked to the Marsyangdi–Suichatar 132 kV line, has also completed land acquisition along with basic infrastructure works like the boundary wall and temporary office.

Once completed, these substations will help balance urban load demand and ensure smooth integration of future power generation into Kathmandu Valley's expanding transmission network.

iii) Package C:

Package C includes the Singha Durbar – Battisputali – Chabahil 132 kV underground transmission line. A new 1.6 km double-circuit underground transmission line will connect the upgraded Singha Durbar substation to a newly proposed GIS substation at Battisputali (Maitidevi). From there, a 3 km underground transmission line will link Battisputali to the existing Chabahil 66 kV substation, which will be upgraded to 132 kV to integrate into the expanded grid.

Another key component is the Teku – Manohara – Mulpani transmission line and substations. This includes a 6.9 km 132 kV double-circuit transmission line using monopole towers along the Bagmati and Manohara river corridors to minimize urban disruption and right-of-way challenges. A 132/11 kV indoor GIS substation (2x30 MVA) will be constructed at Manohara in Madhyapur Thimi Municipality, requiring approximately 3 ropani of flood-resistant land near the river. Additionally, a 5.3 km 132 kV transmission line from Manohara to Mulpani substation will enhance power flow and reliability in the eastern part of Kathmandu Valley.

The project also includes a Balaju – Suichatar 132 kV double-circuit underground transmission line. This new corridor will connect Balaju Substation to Suichatar Substation and will improve power evacuation capacity and grid reliability in the northwestern sector of the valley, serving both residential and industrial customers. The underground design will minimize visual impact, enhance reliability and reduce land acquisition difficulties in this densely populated area.

iv) Package D:

Package D includes three key transmission line projects—Matatirtha–Dukuchhap 220 kV, Dukuchhap–Teku 220 kV, and Dukuchhap–Sunakothi 132 kV—along with three associated substations: the 220/132/11 kV Dukuchhap Substation, the 132/11 kV Sunakothi Substation, and the 220/132 kV New Teku Substation. Additionally, it involves a 220 kV bay extension at the existing Matatirtha Substation.

Land acquisition for the Sunakothi Substation (6.039 ropani) has been completed, with NEA securing the land ownership certificate and distributing compensation. For the Dukuchhap Substation, the sub-committee under the Compensation Fixation Committee is in the process of finalizing its report. Regarding the New Teku Substation, discussions are ongoing for the purchase of the required land currently owned by the Employees Provident Fund.

Detailed feasibility studies are underway for all three transmission line projects. The Terms of Reference (TOR) for the Initial Environmental Examination (IEE) of the Matatirtha–Dukuchhap 220 kV line has been approved by the Ministry of Energy, Water Resources, and Irrigation. Similarly, TOR documents for the Dukuchhap–Teku 220 kV and Dukuchhap–Sunakothi 132 kV lines have been submitted to the Department of Electricity Development (DoED) as part of the IEE process.

v) Package E:

Under Package E, there are two major transmission line projects—namely, the Dukuchhap–Sirutar–Nalagumba–Lapsiphedi 220 kV Transmission Line Project and the Chabahil–Kapangumba 132 kV Underground Transmission Line Project—along with four substations: Banepa 132/11 kV, Nalagumba 220/132/11 kV, Kharipati 132/11 kV, and Sirutar 220/132/11 kV substations.

Due to the limited availability and high cost of land in prime locations within Kathmandu Valley and Banepa city in Kavrepalanchok District, the substations will be of GIS type. Transmission lines will be constructed as overhead, monopole, or underground, depending on the requirements determined by the study.

A total of 60 ropani of land is needed for all those GIS substations, with land acquisition already completed for 10 ropani at Banepa 132/11 kV Substation and 6.2 ropani at Kharipati 132/11 kV Substation. NEA has requested for the loan and grant assistance to different development partners and are yet to be finalized.

5. Gandak-Nepalganj Transmission Line Project

The "Gandak-Nepalganj Transmission Line Project" under Nepal's DOLLAR CREDIT LINE AGREEMENT with the Export-Import Bank of India aims to enhance the power transmission infrastructure to meet the growing electricity demand due to urbanization and economic development. With a total estimated cost of $247.74 million under the loan and $136 million from the GoN, the project aims to improve electricity supply, system reliability, and power quality, and support economic growth, with an envisaged construction period of 36 months. The project includes the following components.

Transmission lines:

S. N.	From	To	Remarks
1.	New Butwal	Parasi	220 kV DC Line
2.	Parasi	Gandak	132 kV DC Line
3.	Hakui LILO	Hakui	220kV 4 Circuit Line charged at 132kV
4.	Parasi	Lumbini	220 kV 4 Circuit Line Upper Line charged at 220kV & Lower two Circuit charged at 132kV
5.	Lumbini	Kapilvastu	220 kV 4 Circuit Line Upper Line charged at 220kV & Lower two Circuit charged at 132 kV
6.	Kapilvastu	Motipur	220 kV DC Line
7.	Kapilvastu	Shivpur LILO	220 kV 4 Circuit Line Upper Line charged at 220 kV & Lower two Circuit charged at 132 kV
8.	Shivpur LILO	Shivpur	220 kV Double Circuit Line charged at 132 kV
9	Shivpur LILO	Kalkate	220 kV DC
10	Kalkate Substation	New Lamahi	220 kV DC
11	New Lamahi	New Nepalgunj	220 kV DC

Substations

S. No.	Substation	Remarks
1	Gandak (Nawalparasi Dist.)	Bay Extension 2 no 132 kV
2	Parasi (Nawalparasi Dist.)	New 220/132/33/11 kV Substation
3	New Butwal Substation (Nawalparasi Dist.)	Bay Extension 2 no 220 kV
4	Hakui Substation (Nawalparasi Dist.)	Bay Extension 4 no. 132 kV
5	Lumbini Substation (Rupandehi Dist.)	New 220/132/33/11 kV Substation
6	Kapilvastu Substation (Kapilvastu Dist.)	New 220/132/33/11 kV Substation
7	Shivpur Substation (Kapilvastu Dist.)	Bay Extension 2 no. 132 kV
8	Kalkate Substation (Dang Dist)	New 220/132/33/11 kV Substation
9	New Nepalgunj Substation (Banke Dist.)	New 220/132/33/11 kV Substation and 132kV Bay Extension.

As of July 2025, Survey licence for the project has been granted and Chilime Engineering and services company ltd has been awarded with contract for detail study and design of the project. The detailed survey of the project has been completed, and tower spotting and tower design works are in progress. IEE works for section Gandak to Shivpur is underway and contract awarding for IEE works of Kalkate to Nepalgunj Section to Chilime Engineering services is underway.

6. Chilime-Kerung 220 kV Transmission Line Project

The Ratmate–Rasuwagadhi–Kerung 400 kV Transmission Line Project is Nepal's first initiative toward establishing power grid connectivity with China, aligning with the national policy to enhance energy security and cross-border electricity trade. The interconnection is envisioned as a vital infrastructure to support future trilateral power trade between China, Nepal, and India, and as a prerequisite for the planned China–Nepal Electric Railway. Additionally, this cross-border link will serve to evacuate power generated by more than 1,200 MW of hydropower projects concentrated in the Trishuli river corridor across Rasuwa and Nuwakot districts, and to support power import when needed, especially to address the anticipated surplus scenario after 2029/30.

The project's scope includes the construction of a 400 kV multi-circuit/double-circuit transmission line extending from Ratmate Substation in Nuwakot to Rasuwagadhi at the Nepal–China border, via Trishuli 3B Hub and Chilime Hub substations. However, a revised initial phase involves the implementation of a 220 kV double circuit transmission line, leveraging the existing infrastructure at Chilime (Nepal) and Jilong (China) substations. This phase involves the design, supply, and erection of 53 towers

over 16 km from Chilime to Rasuwagadhi, including 30 angle towers, with Twin Moose ACSR conductors, galvanized steel earth wire, and 24-core optical fiber (OPGW). The Chinese section will involve 79 km of similar 220 kV line construction.

6th Joint Group Meeting of China-Nepal Power Grid Interconnection Project held by NEA and SGCC on August 7, 2024, in Kathmandu

The substation works will involve the design, supply, and installation of two 220 kV GIS line bays at Chilime Hub Substation and the construction of a 220 kV back-to-back DC converter station with a 2×500 MVA capacity at the Jilong Substation in Tibet. On the project development front, the Chinese Government has committed to conduct a feasibility study. A site visit by PowerChina Hubei Electric Engineering Co. Ltd. was completed in November 2024, and discussions on grant assistance from CIDCA (China International Development Cooperation Agency) are ongoing between NEA and the Chinese side. Additionally, the sixth joint working group meeting between NEA and SGCC was held in Kathmandu on 7 August 2024.

Grant Agreement Signing Ceremony between China International Development Cooperation Agency(CIDCA) & NEA , About Feasibility Study for the China-Nepal Power Grid Interconnection Project (Chilime-Rasuwagadhi-Kerung) dated July21,2025

Detailed Engineering Study of the project will be carried in Fiscal Year 2025/26 based on the governments annual "Plan and Policy". The construction phase is expected to begin in FY 2026/27, with completion targeted for FY 2028/29. The total estimated cost of the Nepal portion of the project is USD 14.47 million, which includes expenses for Right-of-Way (ROW), corporate social responsibility (CSR), environmental mitigation, administrative overheads, customs, and taxes. The Nepal side of the project is proposed to be financed through grant assistance from CIDCA.

7. Chameliya-Jauljibi 220 kV Transmission Line Project

The Chameliya and Kalanga river basins are currently connected to the national grid via a 132 kV double-circuit line from Attariya. Nine hydropower plants with a combined capacity of 172 MW now evacuate power through this line, but with several new plants planned, the existing line won't be sufficient. As the construction of a 400 kV line will take time, an immediate alternative is a 220 kV double-circuit line from Chameliya (Nepal) to Jauljibi (India).

During the 12th Nepal-India Joint Steering Committee meeting held on 11 February 2025, both sides agreed to prepare the Detailed Project Report (DPR) by March 2025 and complete construction by December 2027 — with Nepal building its section and India's portion managed by Power Grid.

NEA and NEA Engineering Company signed a Minutes of Meeting on 5 March 2025 and a contract on 12 June 2025 to prepare the DPR. The project includes a 220/132 kV Chameliya Substation and a ~32 km 220 kV double-circuit line from Chameliya (Nepal) to Jauljibi (India).

8. Nijgadh – Harnaiya 400kV Transmission Line Project

The objective of this project is to strengthen the electricity supply system in the south-eastern part of Bara district and the western region of Rautahat district by enhancing its reliability, capacity, and overall security. Upon completion, the project is expected to significantly improve the power supply to several areas including Adarsha Kotawal, Bariyarpur, Kolhwi, Kalaiya, and Simraungadh in Bara district, as well as Maulapur in Rautahat district. These improvements aim to meet the growing electricity demand and support economic activities in these regions.

The project involves the construction of approximately 30 kilometers of a 400 kV double-circuit transmission line using

quad-moose conductors. This transmission line will start from the Nijgadh 400 kV Substation and terminate at the proposed Harnaiya 400 kV Substation located in Adarsha Kotawal Rural Municipality of Bara. Additionally, this line is envisioned to form part of the future Nijgadh–Motihari 400 kV cross-border transmission corridor, enhancing power exchange capacity with India and contributing to regional grid integration.

Alongside the 400 kV infrastructure, there are also plans to connect the Harnaiya 400 kV Substation to the existing Prasauni 132 kV Substation through a 220 kV transmission line by upgrading Prasauni Substation to 220kV level. This linkage will facilitate efficient power distribution and voltage transformation within the local network.

As of July 2025, the feasibility study for the Nijgadh–Harnaiya section has been completed, and the environmental study for the overall project is in progress. The land acquisition process for the Harnaiya 400 kV Substation has already been finalized. With these key preparatory steps completed, both the Nijgadh–Harnaiya 400 kV transmission line and the Harnaiya Substation are on track to move into the construction phase during Fiscal year 2082/83. Once operational, this project will play a vital role in enhancing the stability delivery of power to industrial corridor. Not only this but this proposed substation shall connect the south corridor line from Harnaiya to Bodebarsaien in future which connects multiple north-south radials.

9. Harnaiya – Inaruwa Transmission Line Project

The objective of the Harnaiya– Bodebarsaien Transmission Line Project is to help to evacuate power from various hydropower projects to the perspective industrial load center in the southern part of Nepal as well as to facilitate the electricity trade with India and enhance the resilience of NEA's transmission and distribution network in the region of Nepal. The project's initial study will be jointly financed by the GoN and NEA.

The transmission line begins at the proposed Harnaiya Substation in Bara District, southern Nepal, and runs east along the Postal Highway, terminating at the Bodebarsain Substation in Saptari District. It features a loop-in loop-out arrangement at Saruatha Substation (Rauthat District), Salimpur Substation (Sarlahi District), Manara Substation (Mahottari District), Balganga Substation (Dhanusha District), and Sukhipur Substation (Sirha District), before ending at Bodebarsain Substation.

10. Arun-Inaruwa-Tingla-Mirchaiya 400 kV Transmission Line Project

The Arun–Inaruwa–Tingla–Mirchaiya 400 kV Transmission Line Project is a strategic component of Nepal's Transmission Master Plan, designed to support long-term power evacuation needs from the eastern hydropower corridors, particularly Arun and Dudhkoshi, by the year 2040. The project was initiated in September 2019, but progress was delayed due to the COVID-19 pandemic. Italian firm ELC Electroconsult S.p.A. provided consulting services for feasibility studies and detailed engineering design, while the Environmental and Social Impact Assessment (ESIA) work was carried out by WAPCOS Ltd., India, in partnership with Environment and Resource Management Consultant, Nepal, beginning in August 2021. The combined consultancy cost USD 3.48 million, covering both feasibility/ design and ESIA studies.

The project's scope includes feasibility studies, power flow analysis, detailed design, cost estimation, bid document preparation, and environmental and social assessments, including forest clearance permits for three major transmission corridors and associated substations.

The first line, TL1, is the Arun Hub (Sitalpati)–Inaruwa 400 kV Transmission Line, a 95.6 km double-circuit line with Quad Moose conductors, designed to evacuate power from the Arun corridor. It includes construction of two 400 kV line bays at Sitalpati substation, with an estimated cost of USD 80.7 million.

The second corridor, TL2, stretches 111.8 km from Arun Hub to Dudhkoshi via Tingla, also using Quad Moose conductors. It is intended to transmit power from hydropower projects in the Dudhkoshi and Solu corridors. This line includes the construction of a new 400/132 kV substation at Tingla and two 400 kV line bays at Sitalpati and Dudhkoshi substations, bringing the total estimated cost to USD 150 million.

The third section, TL3, is the Inaruwa–Anarmani 400 kV line, spanning 89.6 km and designed to strengthen regional supply and facilitate cross-border power trade. It includes a new 400/132 kV GIS substation at Haldibari and four 400 kV line bays at Inaruwa, with an estimated cost of USD 121.88 million.

As of now, power flow analysis, detailed surveys, tower spotting, and geotechnical investigations have been completed for all three transmission lines. Tower designs are finalized, and

foundation designs are nearing completion. The preparation of bid documents, technical specifications, and economic/financial analyses are also at the final stage. The detail design for all substations has been completed. On the environmental side, the ESIA, RAP, VIPDP, GAP, and SEP reports have been completed as per World Bank standards, and the IEE reports have been approved by the Government. A construction license has been applied for the Inaruwa–Anarmani line. The project is currently scheduled for completion by October 2025.

11. Inaruwa-Anarmani 400 kV Transmission Line Project

The Inaruwa–Anarmani 400 kV Transmission Line Project is a vital infrastructure initiative aimed at strengthening Nepal's electricity transmission network, particularly in the eastern industrial corridor. With the country's power demand reaching 2,400 MW and the national grid capacity standing at approximately 3,000 MW, this project is positioned to support both domestic energy distribution and cross-border electricity trade. During the wet season, when Nepal generates surplus electricity, this line will serve as a key export conduit, promoting regional energy cooperation with neighboring countries such as India and Bangladesh, and laying the groundwork for broader Southeast Asian energy integration.

The project's scope includes the construction of an 89.6 km long, 400 kV double circuit transmission line linking the existing Inaruwa Substation in Sunsari District to the proposed New Anarmani Substation in Jhapa District. At the Inaruwa end, the scope involves the construction of four new 400 kV line bays. At the Anarmani end, a new 400/132 kV GIS substation is to be built, featuring 2 x 315 MVA transformers. The total estimated cost of constructing both the transmission line and associated substations is USD 121.88 million.

In terms of progress, the project has reached important milestones in its preparatory phase. The Initial Environmental Examination (IEE) has already been approved, and the construction license application has been submitted. The designs for the transmission line and substations have been completed. The NEA is working toward securing the required project financing, with plans to obtain a loan from the Export-Import Bank of Korea (KEXIM) by the end of 2025, after which construction is scheduled to begin by late 2026.

For the fiscal year 2082/83, the project will focus on completing land parcel verification, land acquisition, and forest clearance processes along the finalized transmission line alignment. These efforts follow the outcomes of the detailed feasibility study. Once completed, the Inaruwa–Anarmani 400 kV line will not only bolster the resilience of eastern Nepal's electricity infrastructure but also serve as a strategic enabler for future power exchange agreements and regional energy integration. The entire project is expected to be completed by the end of 2029.

12. Nijgad 400 kV Substation Project

The objective of Nijgadh 400 kV Substation Project is to help to evacuate power from various hydropower projects to perspective industrial load center in the southern part of Nepal as well as to facilitate the electricity trade with India and to make the transmission and distribution network of NEA more resilient in the southern part of Nepal.

Nijgadh 400/132/33 kV substation will be constructed by loop in loop out arrangement of the under construction 400 kV Hetauda-Dhalkebar Line as well as existing 132 kV east west line at Gujura Municipality Ward No.3, Dhansar of Rautahat District of Madesh Province. The Nijgadh 400kV substation is planned to connect to the Harnaiya Substation of Bara Distrct which shall be connected with Motihari (India) substation via. Harnaiya- Motihari 400kV cross border transmission line for exporting/importing the electricity between Nepal and India Further, Nijgadh substation will be connected to 400 kV Ramauli Substation of Bara District by proposed 400 kV Nijgadh Ramauli transmission line in order to feed the powers to perspective industrial load center in the Birgunj, Jitpur, Simara Industrial Corridor of Bara and Parsa District of Madesh Province.

A request has been sent by the GoN to the EXIM Bank of India to utilize the remaining funds of USD 26.73 million under Line of Credit (LOC) III, but it is yet to be confirmed. The project's Initial Environmental Examination (IEE) Report has been approved by the Ministry of Energy, Water Resources, and Irrigation, and an application has been submitted to the Department of Electricity Development (DOED) for obtaining the Construction License.

III. Nepal-India Electricity Transmission and Trade Project (NIETTP)

Nepal-India Electricity Transmission and Trade Project (NIETTP) funded by World Bank was started with the objective of establishing high voltage cross-border transmission link capacity of about 2,000 MW to facilitate exchange of power with India and to enhance the reliability of electricity supply of Nepal. Furthermore, under NIETTP additional funding, construction of Hetauda-Bharatpur-Bardaghat 220 kV Transmission Lines and concomitant 132 kV substation at Hetauda, Bharatpur and Bardaghat. In addition, Transmission System Master Plan of

Nepal had been prepared under this project and which is now being implemented by NEA. All substations are Air insulated switchgear (AIS) type with double main and transfer bus bar scheme for 220 kV and double main bus bar scheme for 132 kV.

Projects under Construction

1. Hetauda-Dhalkebar-Inaruwa 400kV Transmission Line Project

The objective of this project is to establish high voltage cross-border transmission link capacity of about 2,000 MW to facilitate exchange of power with India and to improve the reliability of power supply within Nepal through construction of Hetauda-Dhalkebar-Inaruwa 400 kV Transmission Line. The estimated project cost is around US$ 170 million and it is funded by World Bank, GoN and NEA. After the closing of the World Bank loan on October 31, 2021, the project is being financed by GoN and NEA. NEA Engineering Company Limited is appointed as a design check and construction supervision consultant for 400 kV Hetauda-Dhalkebar-Inaruwa Transmission Lines and Hetauda-Dhalkebar-Inaruwa 220 kV substations construction works. This project was started in AD 2012 and likely to be completed by December 2025.

The scope of the project includes followings:

- Design, supply and construction of approximately 288 km of Hetauda-Dhalkebar-Inaruwa 400 kV, double circuit Quad Moose ACSR conductor transmission line.
- Design, supply and construction of Hetauda substation: 220/132 kV, 2X160 MVA and 132/11 kV, 10 MVA Transformers and its associated bays, 2 nos. of 220 kV lines bays for termination of 220 kV Hetauda-Dhalkebar D/C Lines and 220 kV line bays for the termination of 220 kV Double Circuit lines from Bharatpur.
- Design, supply and construction of Dhalkebar substation: 220/132 kV, 2X160 MVA Transformers and its associated bays, 2X315 MVA , 220/132 kV Transformer bays, 2 nos. of 220 kV lines bays for termination of 220 kV Khimti-Dhalkebar D/C Lines, 2 nos. of 220 kV lines bays for termination of 220 kV Hetauda-Dhalkebar D/C Lines, 2 nos. of 220 kV lines bays for termination of 220 kV Dhalkebar-Inaruwa D/C Lines and 2 nos. of 220 kV lines bays for termination of 220 kV Dhalkebar-Muzaffarpur D/C Lines.
- Design, supply and construction of Inaruwa substation: 220/132 kV, 2X160 MVA and 220/33 kV, 2X63 MVA Transformers and its associated bays; 132 kV, 25 MVAr Bus Reactor and its associated bay, 4 nos. 132 kV line bays for loop in loop out of existing 132 kV double circuit lines from Lahan to Duhabi and 6 nos. of 33 kV line bays.

All substations are Air Insulated Switchgear (AIS) type with double main and transfer bus bar scheme for 220 kV and double main bus bar scheme for 132 kV. These substations will be equipped with a state-of-the-art control, protection and automation system based on IEC 61850 open standards to facilitate communication between numerous devices within the substation and beyond.

400 kV Double Circuit QUAD ACSR Moose Conductor Stringing work in progress

400kV Tower at Koshi River

For the construction of Hetauda-Dhalkebar-Inaruwa 400 kV Double circuit Transmission lines, contract has been awarded to Angelique International Limited, India – LTB Leitungsbau GmbH, Germany Joint Venture (AIL-LTB JV) on February 3, 2013. The original completion time was 30 months after the contract effective date but due to delay in the site clearance by the various issues of Right of Way (ROW) of lines, the completion schedule was revised and expected to be completed by December 2025.

As of July 2025, Out of 792 tower pads, 773 foundation have been completed, 770 towers have been erected and 534 ckt km of conductor stringing have been completed. The remaining parts fall in the forest area and balance with community dispute locations. The second revised IEE is prepared and is in approval process for felling down of the remaining trees in the alignment of the transmission line. There is public dispute at some location which is also hindering the progress. Dhalkebar-Inaruwa section, a part of Hetauda-Dhalkebar-Inaruwa 400 kV Transmission Line, is completed and charged on June 25, 2024. Dhalkebar-Inaruwa 400 kV Transmission Line is the NEA's first 400kV transmission line with a capacity of about 4000 MW. Single circuit of 84 km transmission line from Dhalkebar substation to Nijgadh of Hetauda-Dhalkebar section is charged at 132 kV voltage level on July 15, 2025. The ROW identification, compensation fixation and compensation payment of land parcel under ROW are in progress. The quad ACSR Moose conductor stringing work is under progress in Hetauda-Dhalkebar section.

Similarly, for the construction of 220/132 kV Substation at Hetauda, Dhalkebar and Inaruwa, Contract was awarded to Central China Power Grid International Economic & Trade Co., China on 12 June, 2014 but due to non-performance of the contractor, contract was terminated on September 22, 2017. After termination of the contract, 220/132 kV Dhalkebar substation balance works has been awarded to M/s Telmos Electronics on January 23, 2018. Initially, Dhalkebar-Muzaffarpur 400 kV Transmission Line was charged at 132 kV importing 100 MW power from India. After successfully charging of 220 kV Dhalkebar substation at 220 kV voltage level on August 16, 2018, power in the tune of 260 MW power is being imported during peak hours through Dhalkebar-Muzaffarpur 400 kV transmission line charged at 220 kV level. Dhalkebar substation is the Nepal's first 220 kV AIS substation. The capacity of 220/132 kV Dhalkebar substation is 950 MVA.

Further, the 220/132 kV Hetauda and Inaruwa substation balance works has been awarded to M/s Consortium of Siemens Limited and Telmos Electronics on December 20, 2018. The 220/132/11 kV Hetauda substation is charged at 220 kV voltage level on June 5, 2024. 400/220/132/11 kV Hetauda substation was inaugurated by Rt. Hon'ble Prime Minister Pushpa Kamal Dahal 'Prachanda' on June 14, 2024. Initially, Hetauda-Bharatpur 220 kV Transmission Line was charged at 132 kV and connected to Old Hetauda Substation. After successfully charging of 220 kV Hetauda substation, Hetauda-Bharatpur 220 kV Transmission Line is charged at 220 kV voltage level. The other remaining civil works of the substation is expected to be completed by end of December, 2025. The capacity of 220/132/11 kV Hetauda substation is 330 MVA.

The 220/132/33 kV Inaruwa substation is charged at 220 kV voltage level on August 2, 2022. The other remaining civil works of the substation is expected to be completed by the end of September, 2025. Two nos. of 33 kV line bay are supplying power to 33/11 kV Inaruwa substation which help to improve the voltage & reliability of Inaruwa. Two nos. of 33 kV line bay are supplying power to 33/11 kV Khanar Substation which reduces the load of Duhabi Substation. The capacity of 220/132/33 kV Inaruwa substation is 446 MVA.

2. Hetauda-Bharatpur-Bardaghat 220 kV Transmission Line Project

This World Bank-funded project started in 2008 to enhance the transmission capacity and bolster the reliability of the Integrated Nepal Power System (INPS). However, the funding of the World Bank has been closed since 31st October 2021. Now, the Project is being constructed using funds from the GoN and NEA's internal budget. With its 220 kV transmission line the project aims to evacuate the power to be generated by various hydropower plants and to serve as a highway for the power flow from the western to eastern region of Nepal and vice versa.

2.1 Bharatpur-Bardaghat 220 kV Transmission Line

The project involves the construction of a 74 km long 220 kV double circuit transmission line using Twin Bison ACSR conductors, initially energized at 132 kV, from Bharatpur to Bardaghat. Following the termination of the contract with M/S Central China Power Grid International Economic & Trade Co. Ltd., China (CCPG) on June 5, 2017, the remaining work was awarded under contract no. NIETTP/BB/AF/5/ICB to M/S Hengton-Optics Electric Company, China, on August 6, 2018, for a contract amount of USD 5.5 million. The new contractor successfully completed the work, and the transmission line has been operational with both circuits in service since 2080-04-27.

2.2 Hetauda-Bharatpur 220 kV Transmission Line

The project aims to construct a 74 km long, 220 kV double circuit transmission line with Twin Bison ACSR conductors, initially energized at 132 kV, connecting Hetauda to Bharatpur. The original contract was signed with M/s ICOMM Tele Ltd., India, on March 9, 2009, for a value of USD 15.3 million, but it was terminated on April 29, 2019. Subsequently, the remaining work was awarded to M/s KEC International Ltd., India, on June 5,

2020, under Contract No. NIETTP/AF/HB/ICB/02, with a contract value of USD 5.4 million and NPR 368.8 million.

The project also includes the construction of new 132 kV substations at Hetauda and Bharatpur, along with bay extensions at the existing Hetauda and Bardaghat substations. The original contract for this work was signed with M/s Zhongding International Co. Ltd., China, on December 16, 2009, for USD 5.8 million, and was terminated on April 17, 2022. The remaining substation works were later awarded to M/s Mahavir Shree International Pvt. Ltd., Kathmandu, on March 12, 2023, under Contract No. HBBTLP-NCB-079/80-001, for NPR 237 million.

The Hetauda–Bharatpur transmission line was completed in March 2024, and both circuits have been operating at 220 kV since July 2024. Substation construction is largely complete and operational, with only minor works remaining. Following the termination of Zhongding's contract, Mahavir Shree International has completed all remaining tasks, and all four substations are in operation. The pending minor works are expected to be finalized by July 2025.

IV. Power System Operation Department (PSOD)

Power System Operation Department (PSOD), under the Transmission Directorate of Nepal Electricity Authority, is the apex body responsible for ensuring the integrated operation of Nepal's power system. Commonly known as the Load Dispatch Centre (LDC), it serves as the main control center for the power system, ensuring the smooth operation of the network by considering all system parameters, constraints, and limits. This ensures a reliable and high-quality power supply to consumers round the clock.

PSOD safeguards the fair operation of all the elements connected to the integrated Nepalese power system (INPS). It ensures the optimal usage of all the generation mix: be it NEA owned power plants, NEA's subsidiary plants, Independent Power Producers (IPP), solar generators etc. in accordance with the standard agreements, operational procedures as well as the power system requirements. It also schedules and optimally manages energy through domestic generation and cross-border exchanges. One of the significant tasks of this department besides efficient power system operation is executing and monitoring power export-import activities. All of these ensure prudential power management and dispatching in the system. Additionally, it has been instrumental in maintaining reliable data and voice communication among grid users as well as the Load Dispatch Centers in India.

The main functions of LDC:

- LDC constantly monitors, supervises and controls the national grid and cross-border transmission lines to ensure a continuous and quality power supply to its consumers via a robust Optical Ground Wire (OPGW) communication network across the country.
- LDC is responsible for real-time operations related to grid supervision and the dispatch of electricity within Nepal and to India through cross-border links, ensuring secure and economic operation of the national grid as per the prevailing Grid Code and standards.
- It plans, schedules, coordinates, and executes the shutdown of grid elements and generators as required.
- It plans, schedules and executes the import and export of power between the neighboring countries under various modalities such as Government-to-Government, Power Exchange Corporation (PEC) mechanism, Power Exchange Markets, NEA to Haryana, NEA to Bangladesh, free power from Tanakpur, etc. It is responsible for bidding in the power exchange market of India via Day Ahead Market (DAM) and Real Time Market (RTM) platforms by optimally forecasting surplus and deficit.
- LDC restores the normal functioning of the power system as quickly as possible after the occurrence of faults or unforeseen events and incidents.
- It devises emergency network plans in case of disasters and natural calamities.
- It advises necessary actions for better system protection coordination and system improvements.

To achieve effective and precise supervision of the power system, a SCADA (Supervisory Control And Data Acquisition) system is being used in LDC. The Siemens Make Spectrum Power 7 SCADA/EMS system, installed at Load Dispatch Center (LDC), plays a pivotal role in the reliable, efficient, and secure operation of the national grid. The system enables real-time monitoring and remote control of substations and power plants across Nepal, facilitating centralized supervision of critical grid parameters such as voltage, frequency, and power flow. Its SCADA functionalities include remote operation of circuit breakers and transformers, alarm and event management, and historical data logging. Through its advanced Human-Machine Interface (HMI), operators can access graphical single-line diagrams and real-time system status, ensuring timely decision-making and grid coordination.

Beyond supervisory control, the Energy Management System (EMS) helps NEA forecast demand, maintain system frequency, manage cross-border interconnections, and optimize the dispatch of generation resources. The system supports international standard protocols (IEC 101/104, DNP3, etc.).

Furthermore, NEA has established an Emergency Control Center (ECC) at Hetauda, which functions as a replica of the main Load Dispatch Center (LDC) in Kathmandu. It serves as a backup control facility to ensure continued operation of the power system in the event of a disaster or emergency affecting Kathmandu. The technical team from LDC regularly visits ECC to perform monitoring and supervision of its facilities. On August 8, 2025, a significant operational drill was conducted. The LDC operations team visited ECC and took primary command and control of the power system for the entire day from ECC. During this time, the operators at LDC served as the secondary (back-up) team. The operation was accomplished successfully and seamlessly from ECC. Moving forward, these types of operational drills will be executed periodically to ensure continued readiness and effective operation from both the control centers.

The LDC is connected to the National LDC of India via an ICCP (Inter-Control Center Protocol) link. This connection enables the real-time exchange of operational data from major cross-border substations, facilitating the monitoring and coordination of power exchanges with India and Bangladesh. Additionally, hotline voice communication has been established between the LDCs of Nepal and India to ensure prompt coordination and response during grid operations.

Emergency Control Center (ECC) at Hetauda

The major highlights of this fiscal year are presented below:

1	Annual System Peak Demand	2901 MW	2082-03-17
2	Annual System Energy Demand	16446.68 GWh	
3	Annual National Peak Demand	2409 MW	2082-02-27
4	Annual National Energy Demand	14115 GWh	
5	Annual Load Factor	66.89 %	
6	Total Exported Energy (Annual)	2380 GWh	
7	The Maximum Exported Energy in a Single Day	21.12 GWh	2081-06-01
8	Per Capita Electricity Consumption	465 kWh	

**Provisional figures based on LDC data*

The key accomplishments of LDC in this Fiscal Year

- *Frequency and voltage control:*

Frequency and voltage are the crucial parameters of the power system as they determine the quality of power supply to the customers. The average system frequency was precisely maintained at around 50 Hz almost throughout the time during this fiscal year. The voltage attained at most of the load centers' substations fell in the range of the permissible limit of +/- 10% up to 132kV and +/- 5% of its nominal value for 220kV and above, as per NEA Grid Code. However, in some of the Central Terai, Mid-Western and Eastern regions, occasionally during the summer season, the system voltage was recorded lower than the permissible limit at some of the substations. Strategically located Capacitor banks and reactors at various substations by the Grid Operation Department contributed to combating the voltage issues to some extent. However, those were not sufficient during specific times and need to be upgraded to maintain the voltage at the desired level. The need for more reactors at some of the stations has also been triggered by the rapid increase of generators in the northern generation corridors.

- *Dispatching and scheduling:*

Effective short-term demand forecasting, daily energy scheduling of INPS, and proficient dispatching of generation have made it possible to optimize the supply-demand situation with the

available generation and the import and export of power from neighbouring countries. This has enabled LDC to realize the economic dispatch of power, keeping the voltage and frequency of the system within a standard limit. The tactical planning of the water level usage of the Kulekhani reservoir power plant has supported maintaining a decent level of the reservoir at present, despite Kulekhani power plants being best and optimally utilized in this fiscal year as well. Similarly, the generations from NEA ROR and PROR plants, as well as all IPPs, have also been optimally utilized, and hence LDC was able to maintain the disciplined operation of the system throughout the year.

- *Cross Border Electricity Trade*

Nepal has been importing/exporting power from India through Bilateral contracts, Day-Ahead Market (DAM), Real-Time Market (RTM) of Indian Exchange Market (IEX) etc. Nepal imports some power through PEC Mechanism from India. Nepal is actively participating in Indian Energy Exchange (IEX) platform with NVVN as nodal agency (SNA) for both import and export of power in Day Ahead Market (DAM) and Real Time Market (RTM) segments. Apart from India, Nepal has also been able to export 40MW of power round the clock to Bangladesh starting from June 15, 2025.

The Energy Management Division along with the system operators bid daily on IEX-DAM/RTM market for selling and purchasing power from India to balance the supply and demand and to optimize the resources. Depending upon the national demand and availability of various PRoR and Storage Plants, selling more and purchasing less quantum during the high price and vice-versa and filling the reservoir by utilizing off peak cheap power has been practiced regularly. Around 2,380 MU (million units) of energy has been sold to India and Bangladesh in this FY 81/82 which helped to generate a substantial amount of revenue contributing positively to the financial health of NEA while making the country a net-exporter of energy.

- *Shutdown coordination:*

LDC, being the focal entity for coordinating all the shutdown events, is responsible for managing and carrying out all the planned, scheduled, breakdowns and emergency shutdowns. This fiscal year, many scheduled shutdowns of the major power plants and transmission lines were completed under close coordination with LDC without causing any major instability in the system. Likewise, different grid divisions also managed the shutdown of major transmission lines for routine maintenance and also during emergency breakdown situations. Similarly, the approved shutdown schedule and emergency shutdown of NEA's Power plants, as well as IPPs were implemented successfully with the grid parameters being tactfully managed during such events. The skillful handling of the system by the operator during the shutdown period has made it possible to supply power with minimum interruption and outage.

- *System restoration and operation under adverse conditions:*

The vigilant monitoring of the system and the prompt decision of the system operator during abnormal situations and fault conditions have helped significantly in controlling the tripping in this fiscal year. The number of partial system tripping events in this fiscal year is 71, with a total partial system interruption duration of 8 hours and 11 minutes. The partial system tripping in most cases was caused mainly due to transmission line constraints prevailing in many parts of the country at present, without sufficient contingency arrangements in the system. However, the system restoration time after each tripping event has been drastically minimized with the proficient actions taken by the system operators. This has also indicated that the Nepalese power system is now evolving towards the next level of intricacy with the rapidly increased generation, continuous load growth and addition of more elements, thereby triggering the necessity of the automation and digital surveillance for instant action and prevention of undesirable events and interruptions.

- **SCADA and communication facilities:**

NEA utilizes its own nationwide optical fiber infrastructure, OPGW (Optical Ground Wire) installed on high voltage transmission networks, to transmit data and voice from substations and power plants to the LDC. This fiber network serves as a robust communication backbone and has been crucial in establishing hotline voice communications with grid substations and major power plants through VoIP telephony systems. In addition to supporting internal operations, NEA has been generating substantial revenue by leasing out portions of this fiber network to telecommunication companies and Internet Service Providers (ISPs) and by integration of IPPs in LDC SCADA system according to "SCADA Integration Directives, 2081". In the fiscal year 2081/082, 23 IPPs and 12 NEA substations have been integrated into the SCADA system at LDC.

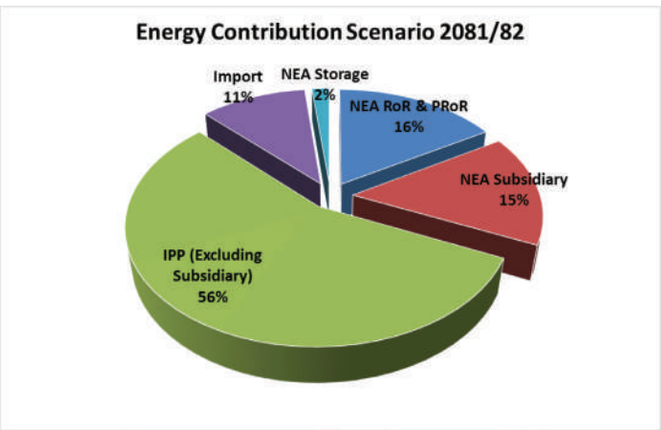
Additionally, looking ahead, LDC aims to enhance the capacity of

its technical personnel to offer consultancy services in SCADA and communication systems, further expanding NEA's capabilities and service portfolio.

- *Status of Supply and Demand:*

In this fiscal year, with the commissioning of 22 new IPP generators, 434.125 MW of installed capacity was added to the INPS which includes few major power plants such as Rasuwagadhi (111 MW), Lower Sanjen (42.5 MW), Sanjen Khola (78 MW), Nilgiri 1 (38 MW), Seti Khola (25 MW) etc. This assisted in fulfilling the increased demand of the system and helped to minimize power import to a certain extent and made it possible to export a substantial quantum of energy during the wet season. The overall national energy demand and peak demand increased by 11.13% and 8.92% respectively in this FY as compared to the last FY. This year observed a decrease in import energy by 8.23% as compared to last year, ensuring the country as a net exporter again. The percentage of imported energy as compared to the total demand this year is 12.13% which is 17.42% lesser than that of the last year which is mainly due to the addition of significant generation this year. Meanwhile, the increment of the exported energy as compared to the previous FY makes NEA the net exporter of energy for yet another time.

The contribution of different generations to meet the total annual energy demand of the INPS for the fiscal year 2081/82 is given below.



Energy contribution scenario (2081/82)

III. Challenges

- The rapid augmentation of the generation and load in the system has added many challenges in the system operation with its existing transmission arrangements that are inadequate to evacuate power to load centers. Even if the transmission line expansion is going on at a rapid scale, it is lagging in pace. Depending on the season, temperature and precipitation patterns, system scenarios are most likely to vary, thereby affecting various transmission lines, power transformers and their loadings at different times. Matatirtha-Hetauda 132 kV, Marsyangdi-New Bharatpur 132 kV, Duhabi-Damak 132 kV, Dhalkebar-Nawalpur-Chapur 132kV, Bhaktapur-Lamosanghu 132kV and many more lines have to be operated almost in their full capacity continuously during certain periods, which have caused frequent overloading issues and subsequently become the reasons for the partial power interruption at times. In addition to those challenges, transformer capacity constraints at New-Khimti Substation, Hetauda Substation, Syuchatar Substation, Balaju Substation, Parwanipur Substation, New-Butwal Substation, etc., are also posing serious restrictions in the power system operation. With the lack of proper and adequate N-1 contingency arrangements in the system, the power system operation department is constantly facing numerous challenges regularly, and this needs to be addressed on time to ensure the quality and reliability of supply to the consumers.
- Automation is now deemed very essential for the power system operation as the network complexity is ever increasing and the manual interventions during the adverse events may not be prompt enough to tackle the varied situations during operation.
- The western part of the country is still facing difficulty in the smooth power supply due to the unavailability of sufficient generation to cater the growing demand in that area. In this fiscal year, some new generators are added in that region but are still insignificant as compared to the load growth and needs a rapid generation addition. Due to the transmission lines' constraints, surplus generation of the eastern part of the country cannot be transmitted to the west and the voltage has also become a major issue there at times.
- Power evacuation of the newly commissioned IPPs due to various constraints prevailing in the power system network is also one of the biggest challenges faced by LDC.
- The frequent unplanned abrupt emergency and forced

outages of power plants during the rainy season and the frequent tripping of transmission lines has created difficulty in the smooth operation of the system, thereby influencing the export-import schedules intermittently as well as providing seamless power supply to its consumers.

- The undeclared fluctuations in the load consumption pattern of the large and bulk power consumers have imposed a major challenge to the system operators to maintain the export-import schedules as well as transmission line loadings and hence burdened NEA with penalty under the Deviation Settlement Mechanism (DSM).
- Data and voice communication from many IPPs and large and key consumers are still not in place causing huge impact on the system operation.
- With the rapid augmentation of the power system network including generators, load centers and cross-border links, the existing taskforce and the infrastructures involved in carrying out these crucial roles in LDC appears inadequate and needs to be expanded aptly.

The details of the System Load Curve, capacity balance, energy balance and trends are presented in Annexure A.

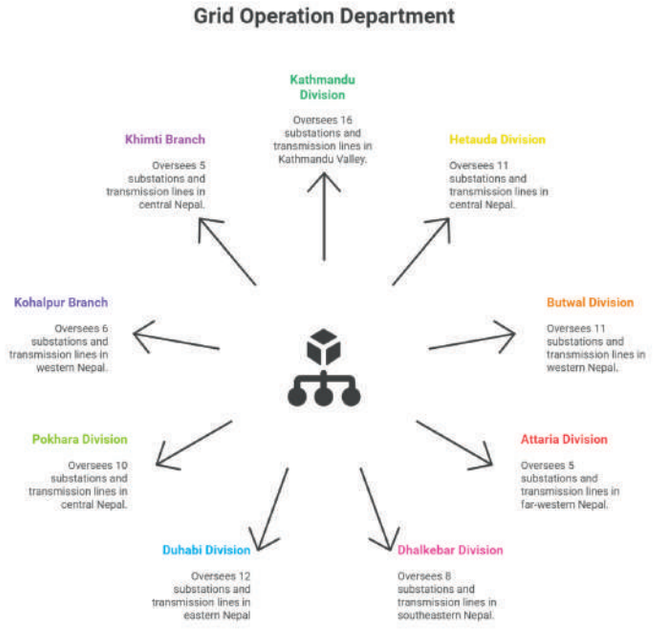
V. Grid Operation Department

The Grid Operation Department (GOD) of the Transmission Directorate oversees the critical task of ensuring reliable, secure, and high-quality power transmission from remote generating stations to major load centers across the country. Its operational scope covers the effective management of transmission lines and substations within the voltage range of 66 kV to 400 kV. The department is actively engaged in both preventive maintenance to identify and mitigate potential risk, and breakdown maintenance to swiftly restore operations during outages. GOD also implements projects aimed at expanding substation capacity, replacing and reinforcing aging equipment, providing reactive power compensation, and carrying out rehabilitation works to strengthen overall grid performance.

In addition to system operations, GOD plays a key role in integrating Independent Power Producers (IPPs) and Bulk Consumers into the national grid at various voltage levels, in accordance with the Grid Code.

The department oversees seven grid division offices located in Kathmandu, Hetauda, Butwal, Duhabi, Pokhara, Attariya, and Dhalkebar, along with two grid branch offices in Khimti and Kohalpur.

In essence, the Grid Operation Department is a cornerstone of Nepal's power transmission system, ensuring a dependable and uninterrupted supply of electricity to support national development and growing energy demands.



1. Kathmandu Grid Division

Kathmandu Grid Division located at Minbhawan, Kathmandu oversees sixteen substations namely Balaju, Siuchatar, New Chabahil, Lainchour, New Patan, Teku, K3, Baneswor, Bhaktapur, Banepa, Panchkhal, Matatirtha, Chapali, Samundratar, Trishuli 3B Hub, and Chilime Hub. The division is responsible for routine and breakdown maintenance of 66 kV and higher voltage transmission lines inside the Kathmandu Valley and those which are connected to the Kathmandu valley mainly from Chilime, Devighat, Khimti, Marsyangdi, Trishuli, Trishuli 3A and Kulekhani.

Several major reinforcement and upgradation works were carried out in the fiscal year 2081/82 to enhance the reliability and performance of the transmission infrastructure. At Banepa Substation, the 66 kV circuit breaker of the 66/11 kV Transformer-1 was replaced following damage. Similarly, at Suichatar Substation, the 132 kV circuit breaker of the 132/66 kV Transformer-2 was replaced after it was damaged. In addition, a

new 132/66 kV, 12.6 MVA Transformer-2 (B-phase) was installed at Suichatar Substation to replace a damaged unit of the same transformer. The HV side bushing (1 phase) of the 132/66 kV Transformer-2 at Suichatar and of Transformer-1 at Chapali Substation were also replaced after damage.

66 kV Circuit Breaker for 66/11kV, 22.5MVA Tr-1, Banepa

To improve the integrity of the underground transmission network, cable straight-through jointing was performed for the 66 kV underground line from Chabahil Substation to Lainchaur Substation. In terms of protection system enhancements, distance relays were installed for the 132 kV Kulekhani and Hetauda lines at Matatirth Substation. To ensure a healthy DC system, the 110 V battery and charger units were replaced at Baneshwar, Balaju, Panchkhal, and Patan Substations.

In addition to the equipment replacement, significant civil and structural maintenance was performed. Benching work was completed for the Trishuli–Matatirth 220 kV Line Circuit-2. Tower protection measures were carried out at various points, including Tower Nos. 19 and 27 of the Chilime–Trishuli 66 kV Line, Tower Nos. 22 and 23 of the Trishuli–Balaju 66 kV Line, and Tower No. 50 of the Trishuli 3A–Matatirth 220 kV Line. Besides these, several other major and minor maintenance activities were undertaken to maintain the operational efficiency and stability of the transmission system.

2. Hetauda Grid Division

Hetauda Grid Division is located at Chowkitole, Hetauda. Eleven Substations, namely at Amlekhgunj, Bharatpur, New Bharatpur (Aaptari), Birgunj, Hetauda, Kamane, New Parwanipur, Piluwa, Purbi Chitwan (Hardi), New Hetauda and Simara, are supervised, operated and maintained by this division. This division is also responsible for routine and breakdown maintenance of 66 kV and higher voltage transmission lines in Bara, Parsa, Makawanpur & Chitwan and some portion of Tanahun Districts.

Various works were successfully executed during the fiscal year 2081/82. These include the transportation, loading/unloading, and repair and maintenance of a 132/11 kV, 30 MVA power transformer. Two sets of 110V batteries and battery chargers were supplied, installed, tested, and commissioned. The 66 kV current transformer of 66 kV Birgunj-1 at Parwanipur substation was replaced with an upgraded 900/1 capacity unit. One set of tubular poles (H-Pole) was added between towers 268 and 269 to reduce sag in the 132 kV Amlekhgunj–Pathlaiya transmission line. The 132 kV Damauli line section in the Aaptari substation switchyard was upgraded from underground to overhead conductor (Bison), along with CT replacement (900/1) in the same transmission line at the old Bharatpur substation. Additionally, a bypass overhead line for the 132 kV Bardaghat T.L. was constructed at Aaptari substation to facilitate power flow (initially designed for 220 kV). Installation work of a 33/11 kV power transformer, 33 kV switchgear, and 33 & 11 kV CRP is ongoing at Hardi substation, expected to be completed within a week. Transportation, loading/unloading, and repair and maintenance of a 132/11 kV, 225 MVA power transformer at Hetauda Grid Division are currently in progress.

Several significant maintenance activities were carried out to enhance the reliability and efficiency of the power system. These include the replacement of the 132 kV SF6 circuit breaker of the 132 kV Kulekhani transmission line at the old Hetauda substation and the replacement of the 66 kV SF6 circuit breaker in the 66/11 kV, 225 MVA transformer bay at the same substation. At Bharatpur substation, the 33 kV SF6 circuit breaker for the capacitor bank bay of the 33 kV Parsa and Devnagar feeders was dismantled, installed, tested, and commissioned. Additionally, the 132 kV side lightning arrester of the 132/11 kV, 22.5 MVA Transformer-3 at Parwanipur substation was replaced. A damaged Y-phase single-phase transformer (132/33 kV, 10 MVA) was also replaced

at Kamane substation. Tower earthing works were completed on six towers, each of the 132 kV Hetauda–Pathlaiya and Pathlaiya–Parwanipur lines, and on the 66 kV Hetauda–Amlekhgunj transmission line. Furthermore, bush cutting was carried out in the sections of the 132 kV Hetauda–Amlekhgunj–Pathlaiya–Parwanipur T.L., 66 kV Hetauda–Amlekhgunj–Parwanipur T.L., 132 kV Hetauda–Kulekhani–Matatirtha T.L., and 66 kV Hetauda–Kulekhani T.L.

3. Butwal Grid Division

Butwal Grid Division is located at Yogikuti, Butwal. This division supervises, operates and maintains eleven substations, namely at Kawasoti, Sunawal, Bardghat, Butwal, New Butwal, Chanauta, Gandak, Motipur, Mainahiya, Tamghas and Sandhikharka. This division is also responsible for routine and breakdown maintenance of 132 kV and higher voltage transmission lines in Nawalparasi, Rupandehi, Kapilvastu, Arghakhanchi and Palpa districts.

Several key activities aimed at maintaining and enhancing the reliability of the transmission system were accomplished. A total of six damaged crossarms were successfully replaced on the Motipur–Arghakhachi 132 kV Transmission Line at Tower Numbers 29 and 30. The damage occurred due to a tree falling onto the line from outside the designated Right of Way (RoW). Prompt restoration efforts were undertaken to ensure continued safe and reliable operation of the transmission line. Additionally, a major maintenance activity was carried out on a 132/33 kV, 63 MVA power transformer. This included the replacement of its low-voltage (LV) bushings and radiators. The transformer had previously caught fire following a burst in the LV-side current transformer (CT), which created a hole in the radiator and caused severe damage to associated equipment, including the CTs, vacuum circuit breaker (VCB), isolators, and conductors. All necessary repair and replacement works were conducted in-house by the technical team of the Butwal Grid Division.

Ongoing works include the design, relocation, and replacement of a suspension-type lattice tower with a monopole structure on the Butwal–Motipur 132 kV Transmission Line. While material supply and civil foundation works have been fully completed, the erection of the monopole and stringing of the transmission line remain pending due to the difficulty in obtaining a suitable system shutdown. This project is expected to further improve the structural stability and reliability of the transmission network once completed.

4. Attaria Grid Division

Attaria Grid Division is located at Attaria, Kailali. This division has five substations to supervise, maintain and operate namely Attaria, Lalpur (Mahendranagar), Lamki, Pahalmanpur and Syaule.This division is also responsible for routine and breakdown maintenance of 132 kV and higher voltage transmission lines of west Gaddachauki connecting Lalpur - Tanakpur Powerhouse, India. The operating area of this division includes Baitadi, Banke, Bardia, Dadeldhura, Dang, Darchula, Doti, Kailali and Kanchanpur districts.

Several critical maintenance and reinforcement activities were carried out to enhance the reliability and safety of its transmission infrastructure. These included the replacement of damaged cross-arms at Tower No. 296 Phase R and Tower No. 104 Phase B along the Chameliya–Attariya 132 kV Transmission Line. The division also conducted major conductor maintenance between Tower Nos. 183–188 and 36–40, addressing broken lines to ensure uninterrupted power flow. At the substation level, structural reinforcements were carried out with the installation of G.I. beams and dropper supports at the Chameliya First

Circuit Bay. Additionally, the conductor of the 33 kV Tikapur Bay was upgraded, and a 15 MVA transformer at Lamki Substation was replaced with a higher capacity 30 MVA unit. To improve slope stability and prevent tower base erosion, benching works were performed between Tower Nos. 204–205 and 402–403 on the Chameliya–Attariya and Pahalmanpur–Attariya lines, respectively. Furthermore, tower protection measures such as gabion laying at Tower No. 89 and shotcrete application at Tower No. 119 were executed to safeguard critical transmission infrastructure against natural hazards.

Chameliya-Attaria 132 kV TL Broken Conductor Maintenance Works between T.N. 183-188

5. Dhalkebar Grid Division

Dhalkebar Grid Division is located at Dhalkebar. This division supervises, maintains and operates eight substations namely at Chapur, Dhalkebar, Lahan, Mirchaiya, Rupani, Tingla, Loharpati and Nawalpur. This division carries out maintenance and operation of 132 kV and above voltage level transmission lines in Saptari, Siraha, Dhanusa, Sindhuli, Ramechhap, Mohattari, Sarlahi, Rautahat and Bara districts. The transmission lines in this division includes 132 kV double circuit transmission lines from Mahauli of Saptari district to Nijgadh of Bara district, 220 kV double circuit transmission line with twin Bison conductor from Dhalkebar to Khimti substation at Kirne of Ramechap district. This division also operates and maintains Nepal portion of Dhalkebar-Muzaffarpur 400 kV double circuit transmission line.

The Dhalkebar Grid Division has carried out various significant reinforcement, upgradation, and maintenance works to enhance the reliability and efficiency of its power infrastructure. At the Lahan Substation, a 132/33 kV, 30 MVA transformer was installed, tested, and commissioned. Similarly, the 132/33/11 kV Loharpatti Substation was successfully charged and handed over for operation. At the Dhalkebar Substation, a 132/33 kV, 63 MVA transformer was installed, and a burnt transformer of the same capacity was replaced by a 30 MVA unit. Additional civil works at Dhalkebar include the construction of a 400/220 kV control room building, open yard development near the 132/33 kV and 220 kV switchyards, and the installation of cable trench slabs and safety information boards.

Maintenance of Broken HTLS Conductor of 132 kV Nawalpur-Chapur Transmission Line at Dhalkebar Grid Division

In terms of maintenance, the substation saw critical interventions such as the ongoing maintenance of the 400 kV GIS, replacement of 132 kV circuit breakers and lightning arrestors at Chandranigahpur and Mirchaiya-2, emergency fire extinguishing efforts, and the repair of a damaged O-ring and burnt transformer control cable. An important upgradation work currently in progress is the connection of the 132 kV Dhalkebar–Loharpatti Line-2 to the 400 kV Dhalkebar–Hetauda line through a 220 kV transfer bus.

Transmission line maintenance included repairing broken conductors on the 132 kV Dhalkebar–Nawalpur, 220 kV Dhalkebar–Khimti, and 132 kV Nawalpur–Chapur (HTLS) lines, as

well as the connection of a separator in the 220 kV Dhalkebar–Khimti line. Permanent protection works were carried out for Towers No. 122, 137, and 88 of the Khimti–Dhalkebar 220 kV line, involving soil nailing, micropile installation, retaining walls, drainage, and crib beams. Other civil works included short-term protection for Tower No. 38 on the Solu Corridor (Mirchaiya–Katari line), slope and tower protection at Tower No. 59, foundation upgrades for a gas circuit breaker at Mirchaiya-2, and protection measures for towers 357, 364, 365, 374, and 375 along the Dhalkebar–Nawalpur section.

Permanent Protection Works for Tower no 122 and 137 of Khimti-Dhalkebar 220 KV Transmission Line.

6. Duhabi Grid Division

The Duhabi Grid Division, located in Duhabi, oversees the operation and maintenance of twelve substations situated at Amarpur (Kabeli), Phidim (Thapatar), Godak, Damak (Parajungi), Anarmani, Duhabi, Inaruwa, Basantapur, Baneswor, Tumlingtar, Dhungesanghu, and Kusaha. This division is responsible for the operation and maintenance of 132 kV and higher voltage transmission lines in the districts of Panchthar, Ilam, Jhapa, Morang, Sunsari, and Saptari. Additionally, it manages the cross-border transmission line from Kushaha (Nepal) to Kataiya (India), contributing to power exchange between Nepal and India.

During the fiscal year 2081/082, the Duhabi Grid Division undertook several important reinforcement, upgrading, and maintenance works. One of the major tasks was the rerouting of Tower No. 51 in the Damak-Godak section of the Kabeli Corridor. This work involved pile foundation construction, including pile reinforcement, boring using a rig machine, integrity testing, and cap concreting. The rerouting also included the erection of a Type DDM+9M Body Extension Tower and stringing of ACSR BEAR conductors.

Further rerouting work for Tower Nos. 50 and 51A in the Damak-Godak section, specifically in Mahmai, Mai Municipality of Ilam, is currently ongoing. This includes reinforcement placement in pile boreholes, bar bending, pile concreting, and setup of necessary equipment. Pile load testing at Tower No. 51A is underway under supervision. The required towers for this task were supplied from Hyderabad and stored at Anarmani. With pile works for Towers 50 and 51A now complete, the remaining foundation concreting, tower erection, and conductor stringing are expected to be finished by Mangsir 2082.

A new control building is planned for construction at the Duhabi Substation. The design and initial cost estimate were prepared by the NEA Engineering Company in FY 2078/079. A revised estimate led to the publication of a tender for its construction. Currently, technical evaluation of the bids is in progress.

Significant restoration work was carried out in response to the collapse of Tower No. 51 on September 28, 2024, due to flooding in the Mahmai River. This incident also led to the collapse of Towers 50 and 52, with partial damage sustained by Tower No. 53. The Duhabi Grid Division, in collaboration with Independent Power Purchasers, executed a successful restoration, which included the construction of new tower foundations and replacements. Power flow was restored by November 24, 2024. Moreover, several system upgrades were completed, including the replacement of the ACSR BEER conductor with HTLS in the Kusaha–Inaruwa–Duhabi section, and CT ratio enhancements at various substations. The 33/11 kV TR-1 and TR-2 transformers at Duhabi were upgraded from 16.6 MVA to 24 MVA, and additional battery and charger installations are underway at Godak, Thapatar, and Amarpur, targeted for completion by 2082/04/21.

7. Pokhara Grid Division

Pokhara Grid Division is located in Pokhara. The major responsibility of this division is to supervise, maintain and operate 132 kV and 220kV substations and transmission lines in Gandaki province. This division has ten substations, namely at Damauli, Pokhara, Lekhnath, Markhichwok, Syangja, Dana, Kushma, Kritipur, New Modi and Lahachwok. The transmission lines under this division includes 132 kV transmission lines Modi Khola - Pokhara - Lekhnath - Damauli - Bharatpur section, Kaligandaki - Lekhnath section, Kushma- Lowermodi section, Kritipur-Udipur section and Middle Marsyangdi- Markichowk - Marsyangdi section and 220 kV line from Dana substation to Kushma substation.

This division carried out the control building extension works at 132KV Pokhara substation and 11KV VCB 5 panel addition and replacement works in Damauli Substation

8. Kohalpur Grid Branch

The Kohalpur Grid Branch is a newly established unit under the restructured organizational framework of the NEA. Located in Kohalpur, Banke, this branch is responsible for the operation, supervision, and maintenance of six key substations: Bhurigaun, Kohalpur, Kusum, Hapure, Ghorahi, and Lamahi.The branch oversees the routine and breakdown maintenance of 132 kV transmission lines extending from Dhankhola in Dang District to the Karnali River in the west. These lines interconnect vital substations, including: Lamahi–Kusum in the east, Kohalpur–Bhurigaun in the west, and Kusum–Hapure and Lamahi–Ghorahi in the north. Its service area spans three districts: Bardia, Banke, and Dang.

During the current fiscal year, several critical activities were undertaken to enhance system reliability and efficiency. Tower protection works were successfully executed at Tower Nos. 449, 535, and 561 of the Kusum–Kohalpur 132 kV transmission line, as well as at Tower Nos. 30 and 31 of the Hapure–Kusum line, all situated within Banke National Park. In terms of substation improvements, the second 132 kV bay at Bhurigaun Substation was energized following the replacement of the Bus Coupler Circuit Breaker and repair of disconnecting switches—marking the first major upgrade since the substation's commissioning. Additionally, outdated 11 kV Vacuum Circuit Breaker (VCB) trolleys were replaced at Kohalpur and Hapure substations. To modernize the metering system, 52 old energy meters were replaced with SMART meters across Bhurigaun, Kohalpur, Kusum, and Hapure substations. Preventive maintenance efforts, including regular patrolling and bush cutting along the Hapure–Kusum, Kusum–Kohalpur, and Kohalpur–Bhurigaun 132 kV transmissionlines, played a crucial role in averting major breakdowns throughout the fiscal

Tower protection works at Hapure-Kusum

9. Khimti Grid Branch

The Khimti Grid Branch was established following the organizational restructuring approved during the 965th Board Meeting of the NEA on 2080/11/24. Functioning under the Grid Operation Department of the Transmission Directorate, the branch is located in Devitar, Ward No. 13, Manthali Municipality, Ramechhap.The branch is responsible for the supervision, operation, and maintenance of the following five substations: New Khimti Substation, Garjyang Substation, Indrawati Substation, Singati Substation and Lamosanghu Substation. It oversees both routine and breakdown maintenance of 220 kV and 132 kV transmission lines in the districts of Ramechhap, Dolakha, Sindhuli, and Sindhupalchok.

The 66/11 kV, 10 MVA Indrawati Substation situated in Sindhupalchok District has remained non-operational since it was inundated during the floods of Asar 2081.Furthermore, last year due to heavy rainfall, Tower No. 7 of Khimti-Lamosanghu 132 kV Transmission Line was completely flooded by the Tamakoshi River. The Line was restored using the Emergency Restoration System (ERS). Also, stub of Tower No. 59 of Khimti Lamosanghu 132 kV Transmission Line was damaged by the landslide which is now successfully been relocated and restored.

Tower erection and conductor dismantling works at Tower No 59 of Khimti Lamosanghu 132 kV Transmission Line

During the year under review, significant reinforcement and upgrade initiatives were undertaken at the Khimti Grid Branch to improve system reliability, increase capacity, and enhance operational performance. The major activities included:

A significant reinforcement and upgradation works were successfully carried out at the Khimti Grid. Notably, Tower No. 59 of the Khimti–Lamosanghu 132 kV transmission line was relocated and the line was fully restored. Additionally, slope stabilization and tower protection were completed at Tower No. 1 of the Khimti–Dhalkebar 220 kV transmission line, involving 308 cubic meters of plum concrete and 252 cubic meters of gabion wall construction to ensure structural stability. Ongoing works include the relocation of Tower No. 7 on the Khimti–Lamosanghu line and slope stabilization with tower protection at Tower Nos. 2 and 43 of the Khimti–Dhalkebar line. At Tower No. 2, approximately 928 running meters of micropiling (100 mm diameter with Fe 500 reinforcement at 8 meters depth) has been completed, while about 992 running meters of soil nailing at depths between 7 and 11 meters has been carried out at Tower No. 43. The foundation for Tower No. 7 on the Khimti–Lamosanghu line is finished, and tower erection is underway. As part of major maintenance activities, temporary stay supports were installed at Tower No. 5 of the Khimti–Dhalkebar 220 kV transmission line to maintain its structural stability.

A. Major reinforcement/upgradation works performed

This department has executed several transformer reinforcement/upgrading works at various substations. Upgradation, reactive power compensation, and rehabilitation of power system equipment are being carried out to meet increasing power demand and reduce voltage drop problems. The replaced transformers are reused at other substations after necessary overhauling and maintenance works. Relocations of such power transformers are cost-effective and immediate solutions for load management.

Various works executed by this department have supported to reduction of power interruption due to inadequate substation capacity. The department has carried out and completed various up-gradation and reinforcement works in FY 2081/082, details of which are in Annexure B.

B. Major reinforcement/upgradation works in progress

The major up-gradation and reinforcement works for various substations have been initiated and these works are under progress as attached in Annexure B.

C. Grid Connection Agreement

The Department has successfully signed the Grid Connection Agreement with 48 Independent Power Producers (IPPs) for 2380.47 MW power to meet the future load demand. Among those 23 IPPs will produce total of 1795.47 MW hydro power and remaining 25 IPPs will produce total of 585 MW solar power.The list of Connection Agreement Signed Hydropower Projects and Solar Photo Voltic Projects are presented in Annexure D .

D. Transmission Loss Status

Comparison of Transmission Line Loss of different F/Y.

S. No.	F/Y	Total Import Energy (MWh)	Total Export Energy (MWh)	Transmission Line Loss Energy (MWh)	Transmission Line Loss in Percentage
1	2068/69	3736805.66	3520922.32	215883.34	5.78%
2	2069/70	3772905.51	3574865.1	198040.41	5.25%
3	2070/71	4120153.81	3889823.1	230330.71	5.59%
4	2071/72	4394005.17	4193004.03	201001.14	4.57%
5	2072/73	3097302.02	2934259.90	163042.12	5.26%
6	2073/74	5552927.57	5275058.79	277868.78	5.00%
7	2074/75	6347849.13	5980995.92	366853.21	5.78%
8	2075/76	7005397.48	6700648.12	304749.36	4.35%
9	2076/77	7149391.47	6826833.47	322558.00	4.51%
10	2077/78	8170175.54	7791266.07	378909.47	4.64%
11	2078/79	10111556.74	9659983.88	451572.86	4.47%
12	2079/80	11708172.92	11182998.99	525173.92	4.49%
13	2080/81	13353198.82	12761130.64	592068.18	4.43%
14	2081/82	15007201.11	14404242.29	598203.42	3.99%

The single line diagram (SLD) of the existing high-voltage substations is presented in Annexure C.

E. Projects under Execution

The Grid Operation Department is executing various projects to increase the capacity of the Grid substations to cater to the increasing load demand and to buy spare power transformers necessary for immediate replacement. The details of the projects under execution have been presented in Annexure B.

VI. Administration Division

The Administration Division is responsible for planning, organizing, directing, and controlling policies related to human resource management under the Directorate which consists of job analysis, placement, transfer, training and development, staff welfare, disciplinary actions, etc. As of now, 948 employees are working out of 1249 approved positions. The details of employees working under the Directorate and its offices are presented in the annexure of this report.

VII. Finance Division

The Finance Division is responsible for carrying out overall financial and accounting functions of the Transmission Directorate with key responsibility areas including revenue administration, accounting operation, budgetary control, and treasury management. This division is also responsible for financial planning, control, and monitoring of the various departments/projects under the directorate.

The expenditure of all the projects executed under the Transmission Directorate is around 74.79 % in the FY 2081/82.

Fiscal Year	Approved Budget in thousand, NPR	Expenditure in thousand, NPR	Percentage of Expenditure (%)
2073/74	9,037,000	4,234,036	46.85
2074/75	15,863,650	4,541,787	28.63
2075/76	14,787,896	11,091,739	75.01
2076/77	14,364,995	13,690,313	95.3
2077/78	13,116,353	9,403,828	71.7
2078/79	10,026,250	9,762,593	97.37
2079/80	20,409,283	11,755,164	57.60
2080/81	28,651,000	18,260,999	76.52
2081/82	15,942,521	11,924,144	74.79

PROJECT MANAGEMENT DIRECTORATE (PMD)

The role of Project Management Directorate (PMD) is to implement the power projects that are financially assisted by Asian Development Bank (ADB), Norwegian Government, and European Investment Bank (EIB). The current project portfolio of PMD is diverse and includes the power projects like high voltage transmission lines, substations, distribution networks, Solar plants with/without Battery Energy Storage System (BESS), digitization and automation of transmission and distribution networks, upgrading of transmission line through high-capacity High Tension Low Sag (HTLS), installation of smart meters, establishment of EV charging stations, conductors, establishment of Data Center and Distribution Control Center etc. PMD, aiming to enhance efficiency of business operations, increase employee productivity, improve accounting practices and support decision making by implementing Enterprise Resources Planning in whole NEA and also implementing a Revenue Management System (RMS) across all provinces of Nepal in about 181 revenue collection centres under Institutional Strengthening Project (ISP)

The ongoing ADB projects are (i) SASEC – Power System Expansion Project (SPSEP) (ii) Power Transmission and Distribution Efficiency Enhancement Project (PTDEEP) (iii) SASEC Power Transmission and Distribution System Strengthening Projects (SASEC PTDSSP) (iv) Electricity Grid Modernization Project (EGMP) and (v) SASEC Electricity Transmission and Distribution Strengthening Project (ETDSP). PMD has also carried out environmental and engineering study of different transmission lines up to 400kV voltage level with length of more than 2000 circuit km and associated substations with ADB's grant support under Project Preparatory Facility for Energy (PPFE).

The execution of 132kV and higher voltage transmission line and substation projects are looked after by Transmission Line and Substation Department (TLSD) under PMD. PMD also has its own Social Safeguard and Environmental Management Department (SSEMD) to manage and monitor the environment and social safeguard issues of the PMD projects.

PMD plans to complete the following transmission line and substation projects in fiscal year 2082/83:

i. 46km 400kV double circuit transmission line from Khimti to Barhabise
ii. 42km 400kV double circuit transmission line from Barhabise to Kathmandu
iii. 400kV substations at Khimti, 400/220kV at Barhabise and 400/220/132kV at Laspsiphedi
iv. 132kV substations in Kathmandu valley e.g. Phutung substation, Chobhar substation, Thimi substation, and Changunarayan SS
v. 132kV underground cable work from Bhaktapur substation to Thimi substation
vi. Installation of Substation Automation System (SAS) at 13 grid substations within Kathmandu Valley
vii. Arunkhola-Dumkibas 132/33kV, 2x30 MVA substation
viii. Keraun 132kV substation
ix. Pangtan 132kV substation
x. Dadakhet – Rahughat 132 kV transmission line and associated 132/33kV substation at Dadakhet and 220/132/33 kV substation at Rahughat
xi. 132kV transmission line upgrading works

I. Transmission Line and Substation Department

The Transmission Line and Substation Department (TLSD) within PMD facilitates the execution of 132 kV or higher voltage transmission line and substation projects. The department is also looking after the grid substation automation projects and carrying out the study of several transmission lines and substations.

Projects Completed in year 2024/25 (2081/82)

1. New-Butwal Bardaghat 220 kV Transmission Line Project

The scope of this project was to construct 220/132kV, 100MVA New Butwal Substation in Sunwal-13, Nawalparasi and 21km of 220kV transmission line from New-Butwal to Bardaghat.

The purpose of this project is to evacuate the power generated by

various NEA/IPPs' generating plants along the Kaligandaki River Basin that are connected to Dana and Kushma Substations and enhance the transmission capacity with improvement in power reliability. Construction of the New Butwal 220kV substation had been completed in November 2021 and had been in partial operation and immediately upon completion of Kushma-New Butwal 220kV double circuit transmission line, it has been in full operation since October 2023.

The contract for design, supply, installation and commissioning of 21km of 220kV transmission line from New Butwal to Bardaghat was undertaken by M/S POWERCHINA SEPCO1 Electric Power Construction Co. Ltd. The project suffered badly due to delay in EIA approval and COVID-19 pandemic and lengthy and tedious process for approval of forest land use and tree cutting etc. However, the project has now been successfully commissioned on December 12, 2024.

New Butwal Substation

Strung Kusma- New Butwal Multicircuit Line

2. Marsyangdi – Kathmandu 220 kV Transmission Line Project

Marsyangdi - Kathmandu 220kV Transmission Line Project was conceptualized to transfer power from Marsyangdi Corridor to Kathmandu valley which ultimately reinforces Integrated Nepal Power System (INPS) and improve reliability of transmission system. The scope of this project includes construction of 82 km double circuit 220 kV transmission line from Markhichowk, Tanahun to Matatirtha, Kathmandu with twin MOOSE ACSR conductor and construction of 220/132kV Substations of capacity 320MVA at Markhichowk and 320MVA (2x160 MVA) at Matatirtha. The substation in Matatirtha is Air Insulated type while in Markhichowk, the substation shall be of Gas Insulated type.

The first contract package agreement for Marsyangdi – Kathmandu transmission line was concluded on June 2016 with M/S. TATA Projects Ltd. India. The line length of 82.0 km D/C including 233 towers has come under commissioning from 21June 2022 in 132kV voltage level. From 31 December 2024, the line was charged at 220kV voltage level.

The second contract package agreement for substations was concluded on 30 December 2020 with M/S. China Machinery Engineering Corporation, China (CMEC), after contract termination with Shenzhen Farad Electric Co. Ltd which was unable to complete the contract performed in December 2017. The 220kV Marsyangdi GIS Substation was charged and commissioned on 31 December 2024. The 220 kV Matatirtha AIS Substation has been completed and inaugurated with successful operation from 28 April 2024.

Matatirtha Substation

Markichowk Substation

3. Amlekhgunj 132kV Substation Construction Project

The Pathlaiya–Birgunj Corridor stands as one of Nepal's most vital industrial zones, stretching from Pathlaiya through Simara to Birgunj in the central-southern region of the country. With the rapid industrial expansion in this area particularly in Simara, the demand for reliable and high-capacity electric power supply has risen significantly. In response to this growing energy need, Nepal Electricity Authority (NEA) initiated the construction of the Amlekhgunj 132/66/11kV GIS Substation, a major infrastructure project aimed at strengthening the regional transmission network and enhancing industrial power reliability.

The scope of the project encompassed the construction of a 132/66kV GIS substation, with transformer capacity of 132/66kV 2x100MVA and 66/11kV 2x10 MVA at Amlekhgunj and to connect with the national grid through a LILO (Loop-In Loop-Out) arrangement of the existing 132kV Hetauda–Pathlaiya double circuit line and 66kV Hetauda–Amlekhgunj–Simara double circuit line. The contract for the "Design, Supply, Installation, Testing and Commissioning of Amlekhgunj 132/66/11kV GIS Substation" was awarded to M/s TBEA Co., Ltd., P.R. China on 7 May 2023. Amlekhgunj GIS Substation was successfully charged and brought into operation on 14 April 2025 (1 Baisakh 2082). The successful energization of this substation marks a significant milestone in the enhancement of the transmission system infrastructure in Madhesh Province, particularly benefitting industries in Simara and Parwanipur, many of which draw power directly from the 66kV transmission line.

Overall layout of Amlekhgunj Substation

4. Mulpani Substation Construction Project

The purpose of this project is to augment grid capacity of Kathmandu Valley and distribute reliable power supply to norther part of Kathmandu specially in Jorpati, Sankhu area. This substation will to cater the demand growth of northern part of the Kathmandu district. Scope of this project included construction of one substation with 4 nos, of 132kV GIS line bays, 2x45 MVA power transformer, 8 nos. of 11 kV outgoing feeder with other required facilities. LILO arrangement will be made in Bhaktapur-Chapali line by constructing new towers.

This project was initiated in FY 2021/22 and is sub-project to the Electricity Grid Modernization Project (EGMP) – Additional Financing funded by ADB. For the execution, contract agreement was concluded with M/s TBEA Co., Ltd, China on 21 August 2022. The 132 kV GIS substation was successfully commissioned on 05 April 2025 and currently all the equipment of the substation has been energized and is in operation state.

Control Building of Mulpani Substation

Mulpani Substation and Dense Load Centers

5. Samundratar- Trishuli 3B 132kV Transmission Line Project

The Project was conceptualized to evacuate the power generated from several hydropower projects being developed in the Tadi River Basin located in Eastern Part of Nuwakot District.The double circuit transmission line has the capacity to evacuate 270 MW power generated from hydropower projects which will be transmitted to Trishuli 3B Hub Substation, which has been constructed in Pairebeshi, Nuwakot. The construction of this project is now successfully completed in the Fiscal Year 2081/82 with the connection via two nos. of the 132kV line bays at Trishuli 3B Hub 220/132/33 kV substation which is connected with national grid at Matatirtha Substation. The 26 km long 132kV Double Circuit Transmission Line and 132/33/11kV, 2x 30MVA Substation constructed by the project were successfully commissioned and inaugurated by Rt. Hon. Prime Minister K.P. Sharma Oli on July 3, 2021. Two nos. of 11kV outgoing feeders, one towards Satbise on the western side of the substation and the other towards Ghyangphedi on the eastern side of the substation are under operation and delivering continuous electricity supply to those areas. This has drastically solved the unreliable power supply and under voltage problems in the supply areas. More than 10 numbers of Independent Power Producers (IPPS) with generation license totaling around 60MW, opting to evacuate power from this substation are under various stages of construction.

The major components of the project are Samundratar Substation with 2 nos. of 132/33kV, 30 MVA and 2 nos. of 33/11kV, 8 MVA transformers and 26 km double circuit 132kV transmission line (including 3 km of four circuits; two circuits to be utilized by Upper Trishuli 3B HPP).

Similarly, Transformer capacity of Chaughada Substation was upgraded to 8 MVA in 33/11kV level with replacement of Instrument Transformers and Switchgears by this project.

The contract for the project was signed between NEA and ETERN-CCCE-FEPEC JV, China and the contract was effective on November 28, 2016. The financing agreement for this project was concluded on April 20, 2015 with European Investment Bank in coordination with Asian Development Bank to finance loan equivalent to USD 12 Million. The total cost of the project including land and ROW cost is estimated to be NPR 1.55 Billion.

Projects Under Construction

1. Tamakoshi-Kathmandu 220/400kV Transmission Line Project

Tamakoshi-Kathmandu 220/400 kV Transmission Line Project is executed by Nepal Electricity Authority (NEA) and funded by Nepal Government and Asian Development Bank (ADB) under Electricity Transmission Expansion and Supply Improvement Project (ETESIP) and Power Transmission Distribution and Energy Enhancement Project (PTDEEP). The project focuses on the development of power transmission facilities to evacuate the hydropower generated in Khimti basin, Dolakha district and Sindhupalchwok district having more than 1000MW capacity to Lapsiphedi Substation at Kathmandu district and New-Khimti Substation at Ramechhap district to be subsequently connected to the national grid. The notable hydropower projects to this transmission system are National Pride Project Upper Tamakoshi, in Khimti basin, Dolakha and Madhya-Bhotekoshi, Chaku Khola & Balefi corridor hydropower projects in Sindhupalchwok district. The project is constructing approximately 42.60 KM long 400kV double circuit transmission line from Khimti Substation to Barhabise Substation and 220/132/11kV 160MVA GIS substation at Barhabise Municipality Ward no. 4 of Sindhupalchwok district. Also 46.50 KM long 400 KV double circuit transmission line from Barhabise substation to Lapsiphedi Substation of Kathmandu district, approximately 10KM long 132kV double circuit transmission line from Lapsiphedi substation to Changunarayan substation and approximately 4 KM long 132 kV four circuit LILO transmission line from Changunarayan substation to Duwakot of Bhaktapur is also in the scope of this project.

The project has three packages. The scopes of the packages are: Package I involves the construction of a 42.60 km 400 kV double circuit transmission line from Khimti Substation to Barhabise Substation, using 118 steel lattice towers with double peaks, equipped with OPGW and earthwire, and quad ACSR Moose conductors. The contract has been awarded to KEC International Ltd., with a targeted completion date of 31st August 2025. Out of 118 numbers of tower, all 118 numbers of tower foundations and towers are erected. Out of 42.60 KM of line stringing, all conductor stringing is complete. Land acquisition for tower pad for Dolakha district and Sindhupalchok district is complete. Tree cutting is almost completed. After completion of the line, punch lists were delivered to the contractor to complete some withstanding jobs and the contractor is already starting to clear it. The line is all ready for charging and commissioning.

Package I: Physical Progress: 99%, Financial Progress: 95%.

Package II comprises the construction of two segments: (i) a 46.50 km 400 kV double circuit transmission line from Barhabise Substation to Lapsiphedi substation, and (ii) a 132 kV transmission line from Lapsiphedi substation to Duwakot of

Bhaktapur, consisting of a 10 km double circuit and a 4.1 km multi circuit section, using BEAR conductor and single peak steel lattice towers with OPGW. The contract has been awarded to Larsen & Toubro Ltd. (India), with a planned completion date of 30th December 2025. The 400 kV section has reached 97% physical and 95% financial progress. Out of 122 towers of 400kV voltage level, 120 numbers of foundation and 118 numbers of tower have been erected. Out of 46.50 km of line, 44km of conductor stringing is complete. Land acquisition process for tower pad in Sindhupalchwok and Kavrepalanchwok district is complete and the almost 99% of respective land owners have received the compensation. Compensation amount for right of way is being distributed along the conductor stringing area and the 400kV transmission line near to completion stage. The tree and crops compensation have been distributed to the land owners during the completion of stringing time. The tree cutting of local resident, community forest and national forest have been completed. Land acquisition notice for 4 towers of 400kV in Kathmandu has been published. Almost 99% of the stringing in the Transmission Line of 400kV section have been successfully ended at the site. Now, the two nos. of 400 kV towers near the Lapsiphedi could not be constructed due to the local disruption. 400kV section: Physical Progress: 97%, Financial Progress: 95%.

132kV section: Land acquisition process and construction not started yet due to continuous obstacle from public.

Package III includes the construction of a 220/132/11 kV Gas Insulated Substation (GIS) at Barhabise, with a 160 MVA 220/132 kV transformer. The contract was awarded to Joint Venture of Guangxi Transmission & Substation Construction Co. and Shenzhen Clou Electronics Co., Ltd. (China), with a completion deadline of 31st December 2025. The construction of 220kV substation (Power Transformer foundation, PEB building, 132kV gantry, Lightning Arrester and CVT, internal road, Firefighting pump house, earthing work etc.) along staff quarter, internal drain all are complete. Installation and testing of 220kV and 132kV GIS, Control and relay panel, power transformer and station transformer, 11kV switchgear, visual monitoring system, lighting system have been complete. Pre-commissioning test of almost all of the equipment is completed.

The project is ready to energize and connect to the NEA grid system.

Physical Progress: 99%, Financial Progress: 85%.

Final stringing at AP 44/0

2. Lapsiphedi and Changunarayan Substation Project

The objective of this project is to construct 220/132kV, 160 MVA & 132/11 kV, 22.5 MVA capacity GIS substation at Lapsiphedi and 132/11 kV, 45 MVA SS at Changunarayan. However, additional scope of Upgradation of existing 66/11kV Teku Substation to 132/66/11kV voltage level and Construction of new double circuit 132kV line bays at Existing Suichatar 132kV substation for charging existing Suichatar-Teku 66kV Transmission Line on 132kV has been included in its new scope.

These substations will play major role to evacuate the power

generated by IPPs and Upper Tamakoshi Hydro Electric Plant through Khimti–Barhabise–Lapsiphedi 400 kV Line. The addition of these substations will also help reinforce transmission network of Kathmandu valley and increasing the reliability of transmission network feeding power to Kathmandu valley. Further, since the areas around these substations are supplied from substations far from load centre, addition of these substations will help to improvement of power quality in these areas.

The contract has been awarded to M/s Larsen and Toubro Limited, India on November 2020 and expected to be completed within end of December 2025.

Around 95% of plants and equipment to be supplied from abroad of all four substations i.e., Lapsiphedi, Changunarayan, Suichatar and Teku Substation has been delivered at site. In Changunarayan substation, almost all civil and electrical works are completed except some minor works.

First and second phase of Teku and Suichatar substation has been charged and erection and testing of the third phase in in progress.

Structural works of Control room building, Quarter Buildings (B, C & D), Water tank, Transformer foundation and Car Parking shed has been completed at Lapsiphedi substation. Construction of approach road and boundary wall is in progress.

3. Kathmandu Valley Transmission Capacity Reinforcement Project (Phase I)

The major objective of the project is to augment Grid Substation capacity by constructing three new 132/11kV GIS Substations, 2x45MVA each at Phutung, Chovar and Thimi. The contract was awarded to M/s Pinggao Group Co. Ltd, China.

Final stringing at AP 44/0

Phutung Substation is expected to be completed within September 2025, Chovar Substation within November 2025 and Thimi Substation is expected to be completed within January 2026. However, due to recent flooding and disruption of the road between Nepal-China via Rasuwa, supply of the remaining equipment such as Tower, Power Cables etc. are affected, which may eventually lead to delay in the above commissioning schedule.

Thimi Control Building cum GIS Hall under Construction

Addition of these transmission substations inside Kathmandu valley will not only enhance the power supply capacity but also increase the reliability of the distribution network and the qualitative electricity supply to the consumers. These new substations are very much needed to cope the growing demand in the outskirt of the valley and to reduce burden on existing substation.

Chovar Control Room Building cum GIS and Transformer Hall

4. Khimti-Barhabise-Lapsifedi 400kV Substation Project

The project envisages the capacity upgradation of New Khimti, Barhabise and Lapsiphedi Substations for evacuation of clean & green energy generated from Tamakoshi basin to INPS in 400kV.

The scope of this project is to construct (i) New Khimti 400/220kV substation including 2 nos. of 400kV line bays to terminate 400kV transmission line along with construction of two numbers ICT bays for connecting two transformer banks of 315 MVA with total operating capacity of 630 MVA (ii) Barhabise 400/220kV substation including 4 numbers of 400kV line bays to terminate two nos. of double circuit 400kV transmission line, construction of two numbers of ICT bays for connecting for connecting two transformer banks of 160MVA with total operating capacity of 320 MVA and construction of 1 bay for connecting 1 nos. of 420 kV, 50 MVAR, 3-phase Shunt Reactor (iii) Lapsiphedi 400/220 kV substation including 4 numbers of 400kV line bays to terminate two nos. of 400 kV double circuit transmission line along with construction of one number of ICT bay for connecting one bank of 315 MVA with total operating capacity of 315 MVA.

The Contract was awarded & signed with M/s Grid Solutions SAS, France on 02 October 2020. The contract time of the project was 900 days whereas it has been extended up to 29 June 2026. At New Khimti, major Civil works with GIS Hall, Gantry & LM towers have been erected, installation of 220kV & 400kV GIS, Installation & Testing of Auto Transformers have completed. EHV cable termination works are at final stage and substation equipment commissioning works is on-going. Construction of the boundary wall at New Khimti is expected to start by August 2025. This substation is expected to be charged by August 2025.

400kV GIS Building and Transformer Banks at 400/220kV 630MVA New Khimti Substation

At Barhabise, major civil works have completed, including challenging work for construction of RRM wall towards the takeoff gantry along with foundations for gantry tower & LM tower. Oil filling and filtration of auto transformers & reactor and pre-commissioning tests are ongoing. PEB, Gantry Tower, Surge Arrestors, Bus Post Insulators have been erected. 400kV GIS erection works, Firefighting system, illumination have commenced. This substation is expected to be charged by the end of 2025.

Oil Filtration & Filling works for Transformer & Reactor at 400/220kV 320MVA-50MVAr Barhabise Substation

At Lapsiphedi: Civil works including transformer foundation, PEB building foundation, retaining wall, fire protection wall is in final stage for completion. All major equipment has been imported and stored at a nearby facility. This substation is expected to be charged by mid of 2026.

Lapsiphedi Substation Site illustrating Transformer and PEB building Foundation Area

5. Kathmandu Valley Transmission Capacity Reinforcement Project-Phase II

The project is the continuation to the Kathmandu Valley Transmission Capacity Reinforcement Project –Phase I and serves the objective to augment transmission capacity of Kathmandu valley. The primary focus of this project is to reduce burden in existing Bhaktapur-Baneshwor-Patan 66 kV transmission line. The scope includes construction of 132kV double circuit underground cable transmission line approximately 12 km from existing Bhaktapur substation to newly proposed GIS substation at Balkumari with 2x45 MVA, 132/11kV and 2x63 MVA, 132/66 kV transformers. This 132 kV transmission line will also connect

Thimi substation in between. The scope also includes LILO of existing Bhaktapur-Baneshwor-Patan 66 kV transmission line at Balkumari.

The construction of 132kV underground transmission line from existing Bhaktapur substation to under construction GIS Thimi S/S is being carried by the Contractor, KEC International Ltd., India. Major task of supply and installations under the scope have been complete except installation of cable last section near substation. NEA has completed IEE study for the remaining part from Thimi substation to Balkumari substation. Bid document preparation is underway for the new Balkumari substation and 132kV underground transmission line from Thimi substation to Balkumari substation. The bid for the remaining line and substation shall be invited in this fiscal year.

6. Chobhar-Patan-Chapagaun Underground 132 kV Transmission Line Project

The main objective of this project is to construct 132/11kV GIS substation at Patan with construction of 4.5 km length of 132kV double circuit underground transmission line from Chobhar substation to Patan substation. The new 132kV GIS substation will have 3 nos. of 132/11kV, 45MVA Power Transformers and will be interconnected to the existing 66/11 kV Patan substation with the help of 2 nos. of 132/66kV, 63MVA Power Transformers. For Patan substation, PEB GIS Hall, Earthing materials and EOT Crane have already been supplied. The power transformers have reached the Nepal Border. The foundations of Control Room Building, GIS Hall and Power transformers are completed. Superstructure works of Control building, indoor and outdoor cable tunnel are under construction.

Under Construction Patan Substation

For underground transmission line, 5832 meters of HDPE pipes and 2500 meters of PLB duct has arrived to the site. Out of which, HDPE pipes and PLB duct has been laid for a route length of approx. 340 meters.

7. Borang-Lapang-Ratmate 220kV Transmission Line Project

This project primarily comprises four key components: the construction of the Lapang 220/132/33 kV GIS Substation, the Borang 132/33kV AIS Substation, 24km 132kV double-circuit transmission line with BEAR conductor from Borang to Lapang within Dhading district, and 24km 220kV double-circuit line with twin MOOSE conductor from Lapang in Dhading to Ratmate in Nuwakot district. The main objective is to evacuate power generated by Independent Power Producers (IPPs) in the Budhigandaki and Ankhu river basins, while also enhancing the reliability and quality of power supply in the surrounding areas. The cost of this project is estimated to be US$39 million, which is funded by GON and ADB under EGMP. The project was initiated in 2077/78, which is scheduled to be completed in Mangsir 2082 (December 2025).

Lapang 220/132/33 kV GIS Substation construction site.

Borang 132/33 kV AIS Substation construction site.

As of Asadh 2082, the layouts for the Lapang 220/132/33kV GIS Substation and the Borang 132/33 kV AIS Substation have been

finalized. The drawings related to the substation switchyard equipment and other associated civil designs are currently under review. Regarding the transmission line, the land acquisition notice for the required tower construction areas has been published, and the compensation distribution process is ongoing.

8. Marsyangdi Corridor 220kV Transmission Line Project

Marsyangdi Corridor 220kV Transmission Line Project, once completed, will evacuate approximately 1600MW of power generated by all the hydropower stations in the Marsyangdi River basin and its tributaries like Dordi, Chepe, etc., to the Integrated Nepal Power System (INPS). The Project was planned to construct approximately 113 km long Double Circuit 220kV transmission line from Manang substation (220/132kV, 100 MVA & 132/33 kV, 30 MVA) at Dharapani, Manang to New Bharatpur SS (220/132kV, 320MVA) at Aanpatari, Chitwan via Khudi substation (220/132 kV, 160 MVA & 132/33 kV, 50MVA) at Khudi, Lamjung and Udipur SS (220/132 kV, 160 MVA & 132/33kV, 50MVA) at Udipur, Lamjung. Currently, the Project is being executed by three different contractors. The EIB, GON and NEA have jointly financed this Project, and GON and EIB have signed the loan agreement of USD 95 Million and the rest shall be managed from GON and NEA funding.

The complete scope of the project has been divided into 3 contract packages.

Package I : Construction of Transmission Line from Udipur Substation to Bharatpur Substation

The first package consists of the construction of about 67km of 220kV, a double circuit transmission line with twin ACCC Drake conductors from Udipur to Bharatpur. The second package consists of the construction of 220/132kV GIS substations at Udipur and Bharatpur. The third package consists of the construction of about 46km of 220 kV, double circuit transmission line with twin conductors (ACCC Drake and ACSR Moose) from Dharapani, Manang to Udipur, Lamjung.

The first package, Contract for construction of the 220kV double circuit transmission line from Udipur to Bharatpur, was awarded to M/s Pinggao Group Co., Ltd, China, and construction work is in progress. As of now, out of total of 200 towers, 170 tower foundations have been constructed, and 150 towers have been erected. In total of 67 km of double circuit line, 6 km double circuit section from Udipur S/S to Middle Marsyangdi Powerhouse switchyard, and the 3 km upper circuit of the multi-circuit stretch in Chitwan area have been completed. The land for the tower pad has already been acquired, and compensation for the same is being distributed in all four districts. In case of ROW compensation, the Project has concluded most of the compensation distribution in Lamjung district and has published a notice for the Chitwan and Tanahun districts. The physical progress of this package is about 86%.

Package II: Constructions of 220 kV Substations at Udipur and Bharatpur

The Second Contract for Udipur and Bharatpur 220/132/33 kV substations was awarded to M/s Larsen & Toubro Construction, India. The construction of both substations has been substantially completed. Both substations are in operation. The New Bharatpur substation was charged and in operation at 132 kV initially, which was later made to operate at 220 kV. The operation handover of this substation has been given to the Hetauda Grid Division. The Udipur substation was charged at 132 kV on 18th September 2024 and has been in operation since then. Currently, this substation is connected to the Dordi Corridor and some IPPs' hydropowers and is evacuating power received from those IPPs. This substation is also connected with the 33 kV Udipur Distribution substation, which has helped to make the local distribution system more reliable.

Package III: Construction of Transmission Line from Manang Substation to Udipur Substation and construction of associated Manang and Khudi Substations:

The third Contract Package for the Construction of the 220kV double circuit transmission line from Manang to Udipur and 220kV substations in Manang and Khudi has been awarded to M/s TBEA Co., Ltd, China. The construction of Khudi substation is in the final stage of completion. The Project is planning to charge this substation at a 132kV voltage level shortly. In the case of Manang substation, the construction of the Control Room Building is almost completed, and foundation works for other substation structures are going on. The approach road to the Substation is under construction. Most of the substation equipment for this substation has been delivered.

Out of a total of 122 towers in the Manang-Khudi-Udipur section, 21 foundations have been constructed, and 13 towers have been erected. Most of the tower parts, conductors, insulators and hardware accessories have been delivered. The physical progress of this package is about 65%.

The Project, consisting of three Contract packages, are expected to be completed by the end of FY 2082/83 (2025/26). The overall

progress of the Project till date is about 73%.

Transformer bank of 1-ph 53.33 MVA transformers in the Udipur Substation, Lamjung

Multi circuit tower erected tower in Khudi Udipur Section

Under Construction Khudi Substation

9. Dandakhet-Rahughat 132kV Transmission Line and Associated Substation Project

In order to improve the supply situation in the Dhaulagiri zone and to evacuate power from hydropower plants that has been generated or in pipeline of the construction in Myadgi River Basin and kaligandaki river basin of Myadgi district, the Dadakhet Rahughat 132kV transmission line project is constructed by NEA, Transmission Directorate, Grid Development Department with the funding from GoN. The project is located at Myagdi district of Gandaki Province.

The 132 kV transmission line connects the Dadakhet Substation to Kaligandaki 220kV transmission line through proposed Rahughat 220/132kV substation. The package comprises of following two main components:

- ✓ 25 km, 132 kV double circuit transmission line with CARDINAL conductor.
- ✓ Construction of a 132/33 kV, 30MVA AIS Substation at Dadakhet, 220/132/33 kV, 200 MVA GIS Substation at Rahughat.

Progress Status:

Physical Progress

The project has acquired 64 Ropani of land at Dadakhet and 92 Ropani at Rakhupiple for the construction of substations.

The substation and transmission line contract was awarded to Larsen & Toubro Limited, India. The contract was signed on 31December2021 and became effective from 28 February, 2022. The contractual completion date has been extended to 16 November 2025. The amended contract amount is USD 15.65 million & NPR 172.41 crore. To date, the contractor has successfully imported major equipment including 220kV and 132kV power transformers, ACSR conductors, long rod insulators, stubs, tower parts, current transformers (CT), capacitive voltage transformers (CVT), isolators, circuit breakers, battery chargers, 220/132kV GIS modules, diesel generator sets, control and relay panels (CRP)/substation automation systems (SAS), and communication equipment. Procurement of items such as OPGW, EHV cables, batteries and chargers, and PEB buildings is currently in progress. At Dadakhet Substation, all major switchyard civil works have been completed, except for a few remaining activities on the 33kV side. Installation of switchgear and substation equipment is nearing completion. At Rahughat Substation, approximately 88% of the terrace development with RCC retaining wall for the switchyard has been completed. Foundations for the control room building, 220kV and 132kV GIS buildings, staff quarters,

gantry towers, etc., have been completed, and equipment foundation works are ongoing.

In the transmission line, 58 out of 78 tower foundations have been completed, and 42 towers have been erected thus far. Till now, the project has physical progress of 80% and financial progress of 62%.

132kV Switchyard with CR Building, Dadakhet Substation

Construction of CR Building and 220kV GIS Building, Rahughat Substation

10. Kathmandu Valley Substation Automation Project

Nepal Electricity Authority (NEA) is actively pursuing a vision for a smarter, more resilient grid system. This ongoing project is set to transform existing infrastructure through comprehensive digitization, modernization, and centralized supervision. By enabling precise monitoring and control of critical power system parameters, we are building the foundation for uninterrupted, high-quality electricity supply to end-users throughout the Kathmandu Valley.

Upon its completion, this transformative project promises a cascade of significant benefits:

Reduced Operational Costs: Streamlined processes and enhanced automation will lead to substantial cost efficiencies.

Boosted Grid Reliability: The upgraded system will drastically minimize downtime, ensuring a more stable and dependable power supply.

Extended Equipment Lifespan: Proactive monitoring and optimized maintenance strategies will significantly prolong the operational life of crucial equipment.

Improved Organizational Effectiveness: Centralized control will empower NEA with greater operational oversight and efficiency.

The project encompasses thirteen strategically important grid substations within the Kathmandu Grid Division. These substations are undergoing full automation, enabling seamless remote operation from the dedicated Master Control Centre at Baneshwor Substation. The contract for this vital initiative was awarded to M/S GE T&D India Limited on January 5, 2020, with the project slated for completion by October 2025.

11. Grid Substation Automation Project-Phase 2

In order to digitalize the NEA powergrid systems, NEA has implemented Grid Automation Project Phase-2, which is basically focused in installing infrastructures for digital control and monitor of 39 nos. of existing grid substations outside Kathmandu valley. The project commenced from 2078/79 and is expected to complete by 2082/83. The project is financed by ADB under loan agreement EGMP, signed on 30 December 2020 and implemented under Project Management Directorate.

The scope of the project includes construction of 6 Master Control Centers (MCCs) at six grid division offices viz. Duhabi, Dhalkebar, Hetauda, Butwal, Pokhara and Attariya, installation of Substation Automation System(SAS) in 39 existing grid substations and 15 nos. of newly commissioned substation with total integrating altogether of 54 grid substations to LDC at Siuchatar, Backup LDC at Hetauda and at respective MCCs, that will help in remote control and monitoring of grid substations.

The project will install state-of-art modern substation technology at all these substations and MCCs including digital surveillance of major equipment in all grid substations, motorized isolators, pilot fault detector systems, hot-line communication and SCADAs.

It is expected that the project will serve to speed up the control and monitoring tasks, assist in easy preventive maintenance, provide remote control of relays and Bays and assist in data collection of power system variables for future analysis.

The project has been awarded to GE T&D India Limited on 19 December 2022. The time period of completion is 900 days from contract effective date. Till date Eighty percent SCADA installation works at substations under Dhalkebar and Pokhara has been complete. Materials procurement for remaining three grids is under-progress. Major activities of the project are expected to complete by end of current fiscal year.

12. 132kV Transmission Line Upgrading Project

The objective of the project is to enhance the power carrying capacity of existing Dhalkebar – Hetauda (about 138km), Suichatar – Matatirtha (about 4.5 km), Suichatar – Teku (about 4.5 km) and Suichatar – Balaju (about 5 km) 132 kV transmission lines by replacing the existing ACSR conductor with HTLS (High Temperature Low Sag) Conductors.

The contract agreement was signed on May 30, 2022, with M/S HG Power Transmission SDN BHD, Malaysia, with a completion period of 900 days from the effective date. So far, the upgrading work has been completed from Hetauda to Pilluwa to Pathlaiya and on a few kilometres within the Kathmandu Valley lines. Currently, conductor upgrading undergoing in Dhalkebar to Pathlaiya section. Total progress of the project till date is 60% physical progress and 57% financial progress.

13. Hetauda-Parwanipur-Pokhariya 132kV Transmission Line Project

This transmission project is designed to reinforce the regional power grid capacity and enhance the system reliability. It comprises the following key components:

- Construction of a 21.21 km, 132 kV Four-Circuit Transmission Line between Parwanipur and Pokhariya: This line is strategically designed connect transmission lines between Parwanipur substation to new Pokhariya substation and additional two circuits to facilitate future industrial connections into the 132 kV system accommodating new users as required.
- Development of a new 132/33/11 kV Substation at Pokhariya (Parsa District) and Bay Extension at the existing Parwanipur Substation (Bara District): These upgrades are vital for meeting the escalating electricity demand driven by industrial growth in the area.
- Upgrading of the existing 132 kV Double-Circuit Line (approximately 17 km) from Piluwa (Pathlaiya) Substation to Parwanipur Substation: The current ACSR BEAR conductor has been replaced with an appropriately sized High Temperature Low Sag (HTLS) conductor to enhance transmission efficiency and capacity.

Project Progress to Date:

Significant milestones have been achieved:

- The reconductoring of the 132kV Double-Circuit line from Piluwa to Parwanipur Substation with HTLS conductor has been successfully completed and has been operational since last six months.
- The construction of Pokhariya 132kV AIS substation with an anticipated completion by March 2026.
- The Initial Environmental Examination (IEE) of the line has been approved, with a revised version currently in its final review stage.
- The Construction License has been issued; a revised version will be procured following the finalization of the updated IEE.
- The design for all 132 kV four-circuit tower types has been finalized.
- The tender evaluation process for the 132 kV Parwanipur-Pokhariya four-circuit transmission line is currently underway.

14. Pangtan 132 kV Substation Project

The project is envisaged for evacuation of approximately 300 MW power from almost 10 IPPs of Balefi Corridor in Sindhupalchowk district as well as improvement of local distribution system and providing construction power to various IPPs at the vicinity. 132/33 kV, 30MVA & 33/11kV, 8MVA power transformers shall be installed at Pangtan substation and necessary GIS bay extension works shall be constructed at 400/220/132 kV existing Barhabise substation under the scope of this project. Design of almost all the equipment have been finalized, and majority of the equipment have also been supplied and delivered to the site. Construction of approach road, compound wall fencing and protection works have been completed, and site grading/levelling work is in the final stage. Major switchyard protection works has been completed. Construction of Control Building, Staff Quarters and other associated major civil works are underway.

Substation Overall Layout

Contract Agreement for the construction of substation was concluded with M/S CQNEC-NHE JV, Nepal on 22 July 2022, and whole of the project work is expected to be completed within F/Y 2082/83.

15. Keraun 132 kV Substation Project

Keraun 132/33kV Substation Project is being implemented with financial assistance from the Asian Development Bank (ADB) through Electric Grid Modernization Project (EGMP). The contract for the construction of substation was awarded to the Consortium of Energypac Engineering Ltd., Bangladesh, and SR Associates Infrastructure Pvt. Ltd., India. The contract agreement was signed on 11June 2021, and effective from 10 August 2021, with the contractual project deadline set for 30 September 2025.

The core aim of the project is to reinforce the electricity distribution network and enhance transmission capability to accommodate the growing energy demand in the northeastern region of Morang District. The scope involves the establishment of the Keraun Substation featuring 2×63 MVA, 132/33kV transformers and 1×22.5 MVA, 132/11kV transformer. Additionally, the project includes construction of 13.67 km double circuit 33kV Keraun–Rangeli and 20.94 km double circuit 33kV Keraun–Biratchowk sub-transmission lines. The substation will receive its power supply via the Duhabi–Padajungi 132kV transmission line, modified by a Loop-In Loop-Out (LILO) arrangement at Keraun, located in Kanepokhari Rural Municipality, Ward No. 2, Morang.

As of July 2025, significant progress has been made. Civil structures such as the boundary wall, staff quarter, and security post have been completed. The Keraun–Biratchowk 33kV transmission line is finished except for 100 meters of underground cable, and the Keraun–Rangeli 33kV line is nearly complete with only underground cabling and 5km of conductor stringing pending. The gantries for both 132kV and 33kV bays, as well as support structures for 33kV equipment, have been erected. Inside the control building, the 12kV switchgear has been installed, and major components such as 33kV current and potential transformers (CT/PT), isolators, vacuum circuit breakers (VCBs), and lightning arresters (LAs) are in place in the switchyard.

Completion of 33kV equipment support structure for Keraun 132/33kV Substation Work

The factory acceptance tests (FAT) for key equipment including power transformers, substation automation systems (SAS), and control and protection panels have been successfully conducted, and some items have already been dispatched from the manufacturer. The interior finishing of the control building is complete, and the installation of panels is underway. Most of the remaining equipment is currently being transported to the site. The project has been expected to be completed by the end of November 2025.

16. Arunkhola (Dumkibas) 132kV Substation Project

The Project is focused to improve the power supply capability of Nawalparasi (Bardaghat Susta-East) district with improved power quality and reliability. After construction of substation by looping in and out of Bardaghat-Sardi 132 kV DC transmission line at Tamang Gaun, Vinayi Triveni Rural Municipality, Ward no. 2, this substation can feed power to the industries nearby as well as to upcoming 33/11 kV substations. Furthermore, the 11kV feeders emanated from the substation will reduce the lengthy feeders from 132/11 kV Bardaghat substation and 132/33/11 kV Kawasoti substation, which will feed Dumkibas, Benimanipur, Arunkhola and households around, hence improving both the voltage and reliability. Scope of the project includes construction of 2X132/33kV, 30MVA substation and required civil structures. The Contract for Design, Supply, Delivery and Construction was signed with the Contractor M/s Godrej & Boyce Mfg. Co. Ltd., India on 17 October 2022 and was effective from 16 December 2022. The Project is funded by ADB.

As of July 2025, the finishing works for Control Room Building, Staff Quarter (Type C), Vehicle Parking Shed, Store Building, Boundary Wall are going on. The foundation work of all equipment and gantry structures is complete. Similarly, the electrical equipment like Power Transformer, Isolators, BPI, LA, CVT, CT/PT along with the equipment earthing for both 132 kV and 33 kV switchyard have been installed. The CRP Panel,

Control Room Building

33 kV switchyard

Awareness Program regarding Pangolin Protection

Awareness Program related to GESI and Safe and Efficient use of Electricity

17. Ghorahi-Madichaur 132 kV Transmission Line project

This project is funded by Asian Development Bank (ADB) under Electricity Grid Modernization Project (EGMP) to electrify Rolpa district which hasn't been connected to National grid yet. Objective of this project is to reinforce the power supply system and power evacuation from different IPP's at Madi Khola and Lungri Khola of Rolpa district and its tributaries. This Project will also evacuate 50MW Solar Power that is going to be constructed in Khungri village near Khungri Substation. This project will evacuate approximately around 300MW of power generated to the INPS (Interconnected Nepalese Power System).

The project comprises of construction of approximately around 40km long 132kV double circuit Transmission Line with ACSR Cardinal from Ghorahi substation (Dang) to proposed Khungri substation (Rolpa), which crosses various municipality/ VDC's of Dang, Pyuthan and Rolpa districts and with one 132/33/11 kV, 30MVA AIS substation hub at Khungri of Rolpa along with 2 no. of 132 kV bay extension at Ghorahi Substation.

The land acquisition for the Khungri Substation at Khungri, Rolpa has been completed. Civil works, including the construction of the boundary wall, store building, and other protective structures at the substation site, have also been finalized. The detailed survey of the transmission line route and the Initial Environmental Examination (IEE) of the project are complete. A contract for the transmission line construction was signed with KEC International Limited, India on 28 December 2023. Soil investigation and the check survey for the transmission line have been completed. Land acquisition for the tower pads in Rolpa and Pyuthan districts has been finalized; however, some disputes remain in the Dang district. As of now, foundations for 55 out of 122 transmission towers have been completed, and 10 are currently under construction. Additionally, erection work has been completed for 15 towers. Construction of the Khungri and Ghorahi substations is approximately 75% complete and is expected to be fully completed by the next fiscal year.

- Contract Signed date: F/Y 2079/80

- Expected Completion Date: F/Y 2082/83
- Project Cost: USD 20 Million
- Funding Agency: Nepal Government (NG) and Asian Development Bank (ADB)

Overall View of Khungri Substation

Tower Erection at Dang district

18. Kohalpur-Nepalgunj 132kV Transmission Line Project

This project has been initiated to improve the power supply capacity in the Banke district. After construction of substation at Bakaspur, Janaki Rural Municipality of Banke district by looping in and out of existing Kohalpur-Mahendranagar 132 kV DC transmission line near Rangila Chowk of Kohalpur Municipality Ward No. 15, the substation can feed power to the industrial sector at Nepalgunj as well as to nearby 33/11 kV substations. This project was initiated in FY 2075/076 (2018/19) and later on funded by ADB. Estimated cost of the project is US$ 12 Million. Scope of the project includes construction of about 9 km long double circuit 132 kV transmission line in multi-circuit towers with ACSR BEAR and 2X 132/33 kV, 63 MVA substation at Bakaspur along with 2 future bays that will exchange power with India through the 50 km long double circuit 132 kV Transmission Line from Nanpara, Uttar Pradesh. The thirty months-contract for the construction has been awarded to M/s PowerChina SEPCO1 Electric Power Construction Co. Ltd., China on 5 July 2023 and has been effective from 3 September 2023.

As of July 2024, Control Room Building, Guard House, Staff Quarters (Type B and Type C) and Parking Shed are under construction. Similarly, the switchyard foundation works of power transformers and LA is going on. The equipment drawings like Power Transformers, LA and Switchgears have been submitted for approval. The gantry and other equipment supporting structures are under review. Similarly, for transmission line, land acquisition for tower pad is at final stage. The design of multi-circuit towers is under review. The project is expected to be completed before February 2027.

.Control Room Building Under Construction

Transformer Foundation Works for 63 MVA Transformer Installation

Projects under Planned and Proposed

1. New Butwal- Lamahi 400 kV Transmission Line Project

As a part of development of East-West backbone network of 400kV transmission line, Project Management Directorate is associated with the detail due diligence study of this 400kV transmission lines and substations in the western part of the country i.e. from New Butwal to Lamahi with ADB Grant assistance.

This New Butwal - Lamahi 400 kV transmission line is located in western region of Nepal. Approximate length of this line is 160.80km and is distributed within 6 (Six) districts namely Nawalparasi West, Rupandehi, Palpa, Kapilvastu, Arghakhanchi and Dang of Lumbini Province. This line originates from New Butwal Substation located in Badera of Nawalparasi West District and will terminate at Lamahi (Rihar) of Dang district.

The construction of New Butwal- Lamahi 400 kV Transmission line starts from AP-16 of the New Butwal – New Damauli 400 kV Transmission Line, for which the implementing agency is Millennium Challenge Account (MCA), Nepal. This New Butwal – Lamahi 400 kV transmission line will share two circuits of the New Butwal – New Damauli 400 kV Transmission Line from New Butwal Substation to AP-16 (Nearby Sarvottam Cement Factory). The New Butwal – AP16 line section of New Butwal – New Damauli 400 kV Transmission Line will be multi circuit and the implementing agency for the same is MCA Nepal.

The focus of New Butwal – Lamahi 400 kV transmission line is extending 400kV East–West backbone through which electricity can be transported from hydropower collection hubs to customers across the country, and through which electricity can be imported from and exported to India.

As a part of project readiness, DPR of the project has been finalized, cost estimate & bidding documents are in the process. In addition to that, the Initial Environment Examination (IEE) has been approved and the Construction license of the project has been received from the Ministry of Energy, Water Resources and Irrigation.

Further to that, ADB has categorized the project as category "A" from the point of view of Environment and they conducted Environmental Impact Assessment (EIA) of the project and report has already been disclosed in the ADB and NEA website. ADB has initiated vulture survey and vantage point survey of the birds in the transmission line alignment. In addition to that the project has conducted the revised Initial Environment Examination (IEE) to align with the studied Environmental Impact Assessment (EIA) which is ongoing. Similarly, the project has already initiated the enumeration of trees laying in ROW of Transmission Line and up to now the total number of trees is found to be 2,15,000. Similarly, request letter for tree cutting permission and forest land uses approval by the cabinet has been initiated.

2. Nijgadh- Ramauli-Pokhariya 400kV Transmission Line Project

The objective of the Nijgadh–Ramauli–Pokhariya 400 kV Transmission Line Project is to help evacuate power from various hydropower projects to prospective industrial load centers in Birgunj, Jitpur, and Simara of Bara and Parsa Districts of Nepal, as well as to facilitate electricity trade with India and to make the transmission and distribution network of NEA more resilient. In the first phase, 38 km of 400 kV Double Circuit Transmission Line from Nijgadh to Ramauli and a 400/132/33/11 kV substation at Ramauli have been proposed. For this part, ADB's loan assistance under the Electricity Transmission and Distribution Strengthening Project (ETDSP) has been approved. The Nijgadh–Ramauli 400kV transmission line and 400 kV Ramauli substation are estimated to cost 85 million USD.

In the second phase, the remaining 27 km 400 kV Double Circuit Transmission Line from Ramauli to Pokhariya and a 400 kV substation at Pokhariya are proposed. The funding for this part is yet to be arranged.

This transmission line begins at the proposed Nijgadh Substation in Rautahat District, southern Nepal, and runs west, terminating at the proposed 400 kV Pokhariya Substation in Parsa District. In between, a new 400/132/33/11 kV substation will be constructed at Ramauli (Bara District), which also features a loop-in loop-out arrangement of the existing Piluwa–Parawanipur 132 kV Transmission Line.

The project Initial Environmental Study Report (IEE) has been approved by the Ministry of Energy, Water Resources, and Irrigation, and an application has been submitted to the Department of Electricity Development (DOED) for obtaining the Construction License. Furthermore, the social and environmental readiness study is ongoing to meet the specific requirements of ADB, and the bidding documents are being prepared, with bids expected to be invited soon.

3. Dailekh-Jumla 132kV Transmission Line Project

The Dailekh–Kalikot–Jumla 132 kV Transmission Line Project is designed to transmit electricity generated from various hydropower projects to key industrial load centers in Surkhet and Nepalgunj, located in Surkhet and Banke districts. Additionally,

the project aims to enhance the resilience and reliability of the transmission and distribution network of the Nepal Electricity Authority (NEA) within Karnali Province.

Project Scope:

- Construction of an 82.14 km double-circuit 132 kV transmission line from Dailekh to Jumla, using ACSR Cardinal conductor.
- Construction of a new 132/33/11 kV, 50 MVA GIS substation at Chandannath Municipality–9, Jumla.
- Bay extension at the existing 132 kV AIS Substation located at Dungeshwor Rural Municipality–1, Dailekh District.

The project is being implemented with financial support from the Asian Development Bank (ADB) under the SASEC Electricity Transmission and Distribution Strengthening Project (ETDSP). The total estimated cost of the transmission line, GIS substation at Jumla, and bay extension at Dailekh is approximately USD 32 million.

The project's Initial Environmental Examination (IEE) has been completed and approved. The IEE report has been disclosed on both the ADB and NEA websites, and post-disclosure public consultations have been successfully conducted.

The bidding process is scheduled to take place in Fiscal Year 2082/83. A construction license for the project under the name "Dailekh–Kalikot–Jumla 132 kV Transmission Line and Substation Project" has been issued by the Department of Electricity Development

4. Okharpauwa-Tinpiple 220kV Transmission Line and Substation Project

This project aims to reinforce the electricity transmission and distribution infrastructure within the Kathmandu Valley and improve power supply quality and reliability in its northern areas. It is an integral component of the planned 220kV Kathmandu ring main system. The scope of work involves construction of Tinpiple 220/132/66/11 kV substation with a combined transformer capacity of 666 MVA. It also includes a loop-in loop-out (LILO) arrangement of the Trishuli–Matatirtha 220kV transmission line via. a 3.67 km, 220 kV multi circuit line. Additionally, the project covers the LILO of the existing 66 kV Trishuli–Balaju and Devighat–Okhaltar double circuit transmission lines through 66kV underground cables, with an estimated total cable route length of 500 meters. This initiative is being funded by the Asian Development Bank under the South Asia Subregional Economic Cooperation Electricity Transmission and Distribution Strengthening Project (SASEC-ETDSP).

The transmission line route survey has been completed. The Terms of Reference (ToR) for the Initial Environmental Examination (IEE) have received approval from the Department of Electricity Development (DOED), and the IEE study is currently in progress. The cost for acquiring the substation land has been finalized, with most landowners already compensated. Meanwhile, the bidding documents are under development, and EPC tenders are expected to be floated soon. The project is targeted for completion by December 2029.

5. Nepalgunj 132kV Transmission Line LILO and Substation Project

The objective of this project is to reinforce the transmission capacity and enhance the supply reliability in Nepalgunj area. The scope includes the construction of LILO arrangement of Nepalgunj to Nanpara 132kV transmission line on multi circuit towers (6 km) plus construction of a new 132/33kV GIS substation in Nepalgunj city (upgradation of existing 33/11 kV substation) with total transformer capacity of 60MVA. Project will be financed by ADB under SASEC- ETDSP. The bidding documents are prepared, and the bids will be invited soon.

6. New Butwal and Kushma Substation Expansion Project

This project aims to enhance the transmission capacity and reliability in Butwal and Kushma areas by expanding existing New Butwal and Kushma 220/132kV substations. The scope in New Butwal substation includes installation of new 2 x 315MVA 220/132kV transformer plus new 132/33/11 KV transformers with total transformer capacity of 170MVA. In addition, new 33kV and 11kV feeders will be constructed. On the Kushma substation part, new 132/33kV 30MVA transformer will be installed. ADB is expected to provide loan assistance to this project under upcoming ETDSP. The bids has been invited and technical evaluation of the bids is ongoing

7. Lamahi - Dododhara - New Attariya 400 kV Transmission Line Project

As a part of development of East - West backbone network of 400kV transmission line, Nepal Electricity Authority, Project Management Directorate is associated with the detail due diligence study of 400 kV transmission lines and substations in the western part of the country i.e. from Lamahi (Rihar) to New Attariya (Daijee) with ADB Grant assistance under Project

preparatory Facility for Energy.

The focus of Lamahi - Kohalpur - New Attariya 400 kV transmission line is extending 400kV east–west backbone through which electricity can be transported from hydropower collection hubs to customers across the country and through which electricity can be imported from and exported to India. The proposed TL will be contributing to sustainable economy, reliable power supply by enhancing the efficiency of transmission of electricity, improving line voltage, reducing technical grid losses thereby enhancing the reliability of the power transmission system and meet the power demand of Dang, Salyan, Surkhet, Kailali, Kanchanpur and Dadeldhura District. The proposed route alignment initiates from Lamahi of Dang district and then traverse through Salyan, Surkhet, Kailali, Dadeldhura and ends at Attariya (Daijee) of Kanchanpur district.

Power Grid Corporation of India Limited has been awarded the job of the detail engineering and complete design of 400 kV TL and associated Substations along the route. As of now, the consultant has already submitted the Detail engineering reports (Survey, Geotechnical, design of tower & foundations, Substation design, Bidding Document) of the transmission line and associated substation. The IEE report for Lamahi - Chhinchu 400 kV TL and Dododhara-New Attariya 400 kV TL has already been submitted to Department of Electricity Development (DoED) for final approval. The detail study on due diligence related activities and engineering design is targeted to be completed by December 2025. The proposed Transmission route and Substation under the scope of detail study and engineering design are as follows:

Transmission Lines:

- Lamahi (Rihar) - Chhinchu 400 kV Transmission Line (about 98.5 km);
- Chhinchu – Dododhara (New Lamki) 400kV Transmission Line (about 90 km);
- Dododhara (New Lamki) – New Attariya (Daijee) 400 kV Transmission Line (about 99.5 km);

Substations:

- Chhinchu 400 kV substation;
- New Attariya 400kV Substation;.

8. Engineering and Environmental Study of other Transmission Lines and Associated Substations

The prime objective of Project Preparatory Facility for Energy (PPFE Grant 0361 funded by ADB) is to prepare projects ready for funding in future. For this some of the transmission lines and associated substations projects are selected for detail study on the engineering and environmental sides. For this consulting firms are selected and given task to prepare Detail Project Report including detail transmission and substation design with tower spotting and demarcation in the site, safeguard studies, preparation of cost estimate and preparation of the Bidding documents in detail enough to provide adequate information and data to ensure that the Project will be ready for procurement and construction immediately after the completion of intended project preparation. Following Project Preparatory Studies are ongoing under PPFE grant:

Engineering and Environmental Study of Transmission Lines and Associated Substations

Under PPFE (Grant 0361 funded by ADB), three 400 kV Transmission lines and two 132 kV Transmission lines and associated substations are under study. Following three packages have been prepared for detail engineering and environmental studies of Transmission lines and associated substations:

Package-1 (CP-01):

i. Tingla Hub-New Khimti 400kV Double Circuit Transmission Line (approximately 55 km) and associated bay expansion works at Tingla Hub Substation and New Khimti Substation.
ii. New Khimti - Sunkoshi Hub - Dhalkebar 400kV Double Circuit Transmission Line (approximately 80 km) and associated substation at Sunkoshi Hub and bay expansion at Dhalkebar Substation.

Proposed Line and associated substation cater the evacuation of power generated in Zone 4 of the Transmission System Development plan of Nepal. 5.5 GW power is planned to be evacuated from this Line.

Above scope of study works has been completed and aforementioned Projects are for gunding for further implementation.

Package-2 (CP-02):

i. The 400 kV Double circuit Budhigandaki Corridor (Philim - Gumda - Ratamate)(approximately 95 km) transmission line and associated 400 kV substations at Philim/Gumda (Gorkha District) and Ratamate (Nuwakot District).

Total 2.3 GW power generated from the hydroelectric projects in the Budhigandaki Corridor is planned to be evacuated from this Line.

ii. 132kV Double circuit Dailekh - Kalikot - Jumla (approx. 80 km) and associated substations at Jumla and Kalikot and bay extension work at Dailekh substation

The 132kV Transmission line from Kohalpur- Surkhet-Dailekh is being implemented by Transmission Directorate of NEA. The Kalikot and Jumla district are not connected by 132kV or higher voltage grid. The proposed 132kV Line and Substation provides the easy access of High Voltage National grid to these districts and adjacent districts, thus help in achieving the government target of rural electrification and provide electricity to all.

iii. 132kV Double circuit Lamosanghu-Kavre/Ramechap (approx. 40 km) transmission line and associated Substations at the border area of Kavre/Ramechhap and associated bay extension work at Lamosanghu Substation.

Though, the area within the Kavre and Ramechhap district is currently being supplied by 33kV network, power quality in these area is very poor, less reliable. So, the Lamosanghu - Kavre/Ramechhap 132kV transmission line with substation at border area of Kavre and Ramechhap is proposed to strengthen the transmission and distribution capacity in these areas.

Among the aforementioned projects, funding for the implementation of the 132 kV Double Circuit Dailekh–Kalikot–Jumla transmission line and the associated substation at Jumla has been secured and is being implemented with support from ADB. The remaining projects are currently in the process of seeking funding for implementation.

Package-3(CP-03):

400 kV Double circuit Damauli - Kusma - Burtibang - Bafikot (approximately 200 km) transmission line and associated 400kV substations at Kusma, Burtibang and Bafikot and bay extension at Damauli Hub substation

This project caters for the evacuation of power generated in the Zone 3 of Transmission System Development Plan of Nepal. Many small and medium capacity power plants are located in Zone 3 including Kaligandaki Gorge (164 MW) and Kaligandaki Kowan (400MW). The 1.8 GW power is planned to be evacuated from this Line.

The Contracts for Consulting Services for Engineering and Environmental Study of Transmission Lines and associated Substations for three (3) packages were signed between NEA and Power Grid Corporation of India Limited, India in association with Jade Consult Pvt. Ltd., Nepal (the Consultant) on November 2019. The contracts became effective in February 2020. Desk Study, Power Evacuation Study, Walkover Survey, Detail Survey, Check Survey, Transmission Line planning and profiling etc. have been completed. Detailed design of substation and transmission line and IEE are at the stage of completion.

Above scope of study works has been completed and Projects are seeking funds for the further implementation.

Additional Scope under CP-01, CP-02 and CP-03:

The following additional scopes are further included in the above consultancy contract packages (CP-01, CP-02 and CP-03) for the engineering and environmental study as in the original scope of works:

i. Lamahi-Chinchhu 400 kV Transmission Line (approx.95km)
ii. Chhinchu-Dododhara 400 kV Transmission Line (approx. 85 km)
iii. Dododhara-New Attariya 400 kV Transmission Line (approx. 87 km)
iv. New Khimti-Kavre/Ramechhap 132 kV Transmission Line (approx. 35 km)
v. Phukot-Kalikot 132 kV Transmission Line (approx. 30 km)
vi. Lamahi 400/132 kV Substation
vii. Motipur 400/132 kV Substation
viii. Chhinchu 400/132 kV Substation
ix. New Attarya 400/132 kV Substation

The Study works of Lamahi-Chinchhu 400 kV TL, Chhinchu-Dododhara 400 kV TL and Dododhara-New Attariya 400 kV TL Projects are currently ongoing where as for other projects study work has been completed. Among all these above projects, funds are secured for Lamahi 400/132 kV Substation project only which is being funded by ADB.

Package-4(CP-04):

Power Transmission System Planning for Major Cities of Nepal

The existing capacity of transmission lines and substations in the city areas will be insufficient to meet the growing energy demand as well as peak demand. Therefore, there is no alternative to upgrading the capacity of existing transmission lines and substations as well as construction of new transmission lines and substations. The power transmission infrastructures require a lot of land and right of way along the line. It is very hard to find the land and RoW in the cities to construct transmission

infrastructures which will be an evident problem in the future. Hence, NEA has decided to plan the transmission infrastructure considering the future demand of electricity till 2050 AD and develop infrastructure accordingly phase wise. Similarly, it has become essential to find some alternatives to avoid land and RoW problems in transmission infrastructure by adopting modern practices like underground transmission line, compact substation, transmission system using monopoles, etc.

This project will prepare a power transmission system plan of major cities and associated industrial areas of major cities of Nepal taking into account the future load growth till 2050 AD including feasibility study and project preparation. Cities under the scope are divided into 7 different clusters as:

Kathmandu Valley (Kathmandu, Lalitpur and Bhaktapur Districts) including Banepa City of Kabhrepalanchowk District

a. Pokhara Valley (Kaski District)
b. Biratnagar, Itahari, Dharan, Biratchowk and adjacent Cities (in Morang, Sunsari and Jhapa Districts)
c. Janakpur and Bardibas Cities (in Danusha and Mahottary Districts)
d. Hetauda, Simara, Parwanipur and Birgunj Cities (in Makawanpur, Bara and Parsa Districts)
e. Butawal, Bhairahawa and Sunawal Cities (in Rupandehi and Nawalparasi Districts)
f. Nepalgunj and Kohalpur Cities (in Banke District)

The contract was signed on 2nd April 2021 between NEA and WAPCOS Limited, India which became effective on 21st April 2021. Project planning and preparation document and feasibility study reports have been submitted so far. IEE study and detailed design of some selected transmission lines and substations is under progress for the original scope of works under the Contract.

Following group of cities is included further as an additional scope in the Contract awarded to WAPCOS for the transmission system planning and feasibility study:

a. Bharatpur Metropolitan City and Ratnanagar Municipality in Chitwan District
b. Damak, Birtamod,Bhadrapur Cities in Jhapa District
c. Dhangadhi, Mahendranar, Attariya Cities in Kailali and Kanchanpur Districts
d. Birendranagar City in Surkhet District

Most of the tasks under the scope including the additional scope of the works is completed except IEE of selected transmission lines, which is expected to be completed within December 2026.

9. Dudhkoshi-Dhalkebar 400kV Transmission Line Project

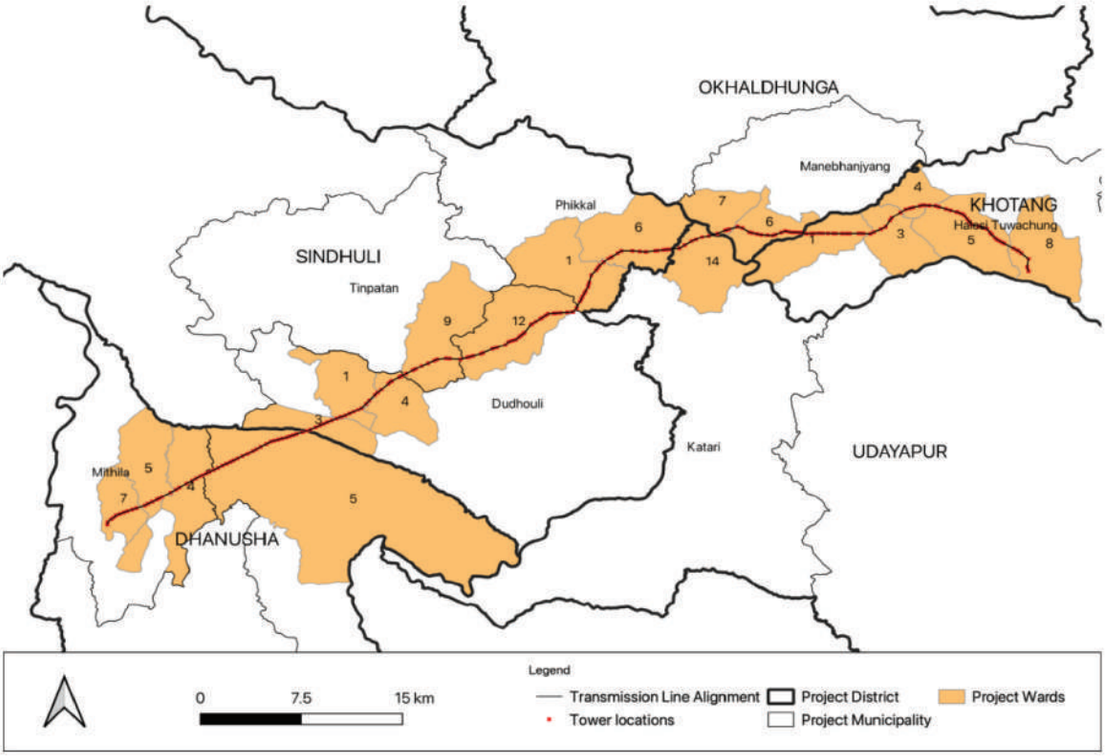
This project has been established to evacuate the power generated from the Dudhkoshi Storage Hydroelectric Project and surrounding hydroelectric plants along the route. The transmission line has a total length of approximately 82 km, starting at the main powerhouse of the Dudhkoshi Storage Hydroelectric Project located in Halesi Tuwachung Municipality-8, Khotang, and ending at the existing Dhalkebar Substation located in Mithila Municipality-7, Dhanusha.

The project includes connecting the line to the existing GIS hall at the Dhalkebar Substation. To accommodate the necessary electrical accessories, there will be two indoor spare bays, each approximately 10m x 15m, for each circuit of this transmission line inside the existing GIS hall. Additionally, there will be two outdoor bays, each approximately 10m x 50m, to accommodate the landing arrangement of the transmission line adjacent to the GIS hall.

The Asian Development Bank (ADB) has provided financial support for conducting the feasibility study (FS) and environmental study of the project.

Status of Project Progress

S.N.	Description	Status
1	DPR Preparation	95% Complete
2	IEE Study	95% Complete



Salient Features of the Project

Name of the Project	Dudhkoshi-Dhalkebar 400kV Double Circuit Transmission Line
Province	Koshi, Bagmati and Madhesh
Districts	Okhaldhunga, Khotang, Udayapur, Sindhuli and Dhanusa
Voltage Level of the Transmission Line	400 kV
Maximum System Voltage	420 kV
Length	82 km
Circuit	2 Circuits
Conductor Name	ACSR Moose (Quad)
Right of Way	46 m; 23 on either side from center line
Starting Point	Dudhkoshi Main Power house Switchyard
Ending Point	Dhalkebar Substation

II. Social Safeguard and Environment Management Department (SSEMD)

Social Safeguard and Environment Management Department (SSEMD) under Project Management Directorate (PMD) was established on 23 February 2021 with the objective of safeguards implementation and compliance monitoring of projects implemented by PMD. The department is headed by a director and supported by dedicated environmentalists, sociologists, civil engineer, administrative, and other support staffs.

Major interventions of SSEMD

1. Environmental studies and Monitoring (internal and external), Mitigation and Reporting of Safeguard activities of Transmission Line (TL), Substation (SS) and Distribution System Projects and implementation of Community Support Programs (CSP) under the PMD.
2. Preparation of Quarterly and Semiannual Environmental and Social Monitoring reports and submission to ADB
3. Arrange meaningful Public Consultation, Public Hearing,

Trainings and Awareness Programs,

4. Ensure information records and data base of the safeguard implementation activities,
5. Implementation of Gender Equality and Social inclusion (GESI) related activities
6. Grievance redress and management (issue identification, documentation and status)
7. Other Environmental and Social Issues with RAP and rehabilitation.

Works completed by the department in FY 2081/82

- Third party External Social Monitoring and Evaluation Reports of SASEC-PSEP and PTDEEP completed and submitted to ADB
- Establishment of five Environmental and Social Management Unit (ESMU) at project sites of EGMP and EGMP-AF projects and mobilization of Environmental and Social safeguard officers.
- Safeguard Implementation and Mitigation Measures of Tanahun Rural Electrification Project completed as per the MoU with the project
- Skill development (Light vehicle and Electrical House Wiring) Trainings for project affected families and Non Timber Forest Products (NTFP) training to project affected Community Forests of Dadakhet-Rahughat 132kV TL project (DRTLP) completed
- Citrus farming training and Awareness on GESI and Safe and Efficient Use of Electricity to PAF of Ghorahi-Madichaur 132 kV TL project (GMTLP) conducted
- Placement of Hoarding boards in DRTLP, GMTLP, Kohlpur Nepalgunj 132kV TL project (KNTLP), Chobhar Patan Underground 132 kV TL project (CPUTLP) and Bhaktapur Thimi 132kV Underground TL project (BTULP)
- Light vehicle training in KNTLP, BTULP project conducted
- Mason training and Awareness on GESI and Safe and Efficient Use of Electricity to PAF of Borang Naubise Ratmate 220kV TL project (BNRTLP)
- Awareness program conducted on Safe and Efficient Energy Use in GMTLP, KNTLP Pangtang Dumkibas S/S under EGMP and EGMP-AF projects
- Smart metering training to women electrical engineers under Power Transmission and Distribution Efficiency Enhancement Project (PTDEEP) and Customer Service training under EGMP project conducted
- Pangolin Management Action Plan for Dumkibas S/S implemented
- Safeguard Readiness Report for Nijgadh-Ramauli 400kV TL and Dailekh-Kalikot-Jumla 132kV TL of SASEC- Electricity Transmission and Distribution Strengthening Project (ETDSP) prepared and submitted to ADB
- Environmental and Social safeguards monitoring works and mitigation programs of different subprojects of EGMP and EGMP-AF are in process of implementation.

Summary of under construction/planned & proposed Transmission Lines /Substations

Transmission Line

S.N	Description	Voltage Level	Transmission Directorate	Project Management Directorate	Total
1	Under construction Transmission Line (Circuit km)	132 kV	811	343	1154
		220 kV	160	274	434
		400 kV	270	176	446
Total (Circuit km)			1241	793	2034
2	Planned and Proposed Transmission Line (Circuit km)	132 kV	840	268	1108
		220 kV	1894	0	1894
		400 kV	1717	1886	3603
Total (Circuit km)			4451	2154	6605

Substation

S.N	Description	Transmission Directorate	Project Management Directorate	Total
1	Under construction (MVA)	2445.50	3893.00	6338.50
2	Planned and Proposed (MVA)	9267.50	6910.00	16177.50

ANNEXURE A: LIST OF FIGURES

Figure 1: System Load Curve (Maximum Demand) Ashadh 17, 2082 (July 1, 2025) Tuesday

Figure 2: Annual System Peak Load Curve Jestha 27, 2082 (June 10, 2025) Tuesday

Figure 3: Capacity Balance (MW) in FY 2081/82 (2024/25)

Figure 4: Energy Balance in GWh of 2081/82 (2024/25)

Figure 5: Comparison of Daily IEX (MCP) and NEA Power Purchase Price through IEX in FY 2081/82 (2024/25)

Figure 6: Comparison of Daily IEX (MCP) and NEA Power selling Price through IEX in FY 2081/82 (2024/25)

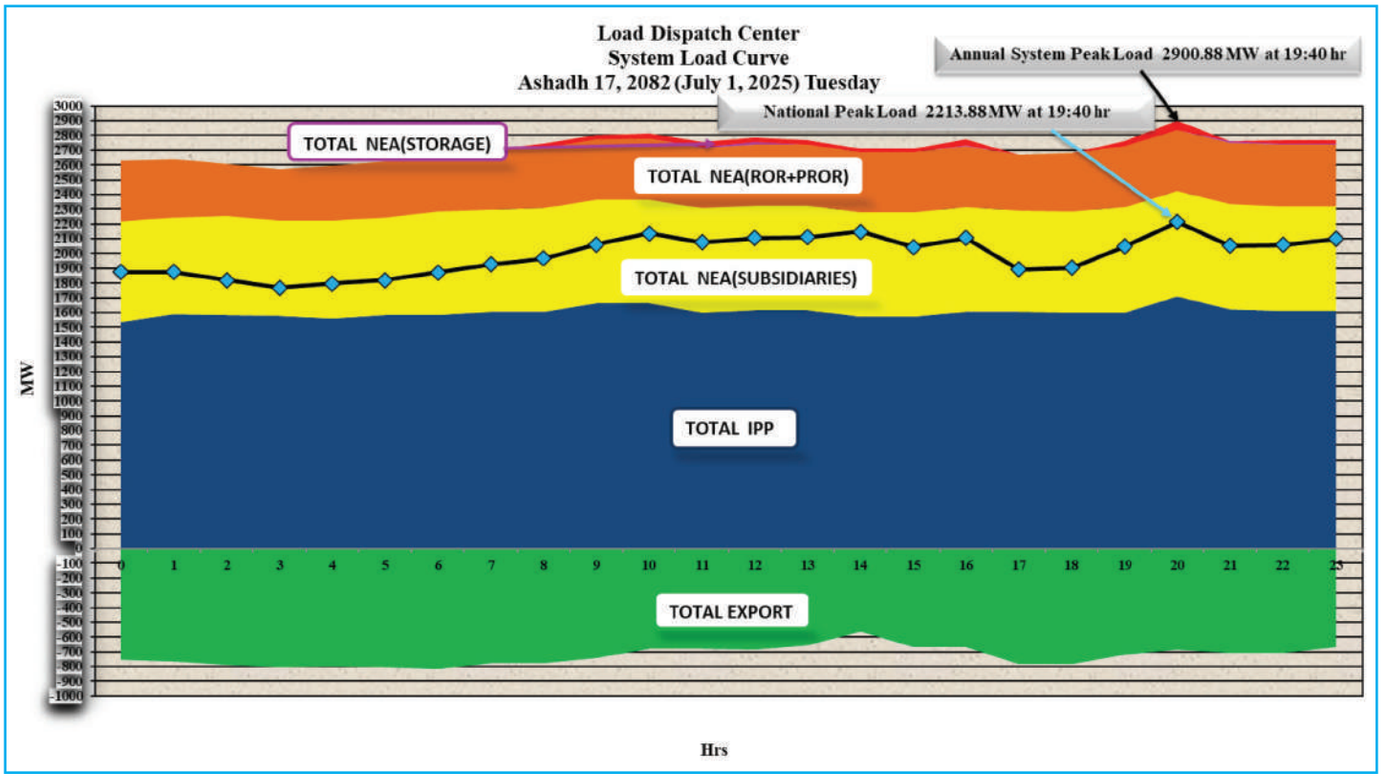
Figure 7: Imported Energy from different lines in FY 2079/80 (2022/23), 2080/81 (2023/24) and 2081/82 (2024/25)

Figure 8: Comparison of Exported Energy to India in FY 2079/80 (2022/23), 2080/81 (2023/24) and 2081/82 (2024/25)

Figure 9: Total System Energy Demand Trend in FY 2079/80 (2022/23), 2080/81 (2023/24) and 2081/82 (2024/25)

Figure 10: Total System Peak Demand Trend in FY 2079/80 (2022/23), 2080/81 (2023/24) and 2081/82 (2024/25)

Figure 1: System Load Curve (Maximum Demand) Ashadh 17, 2082 (July 1, 2025) Tuesday



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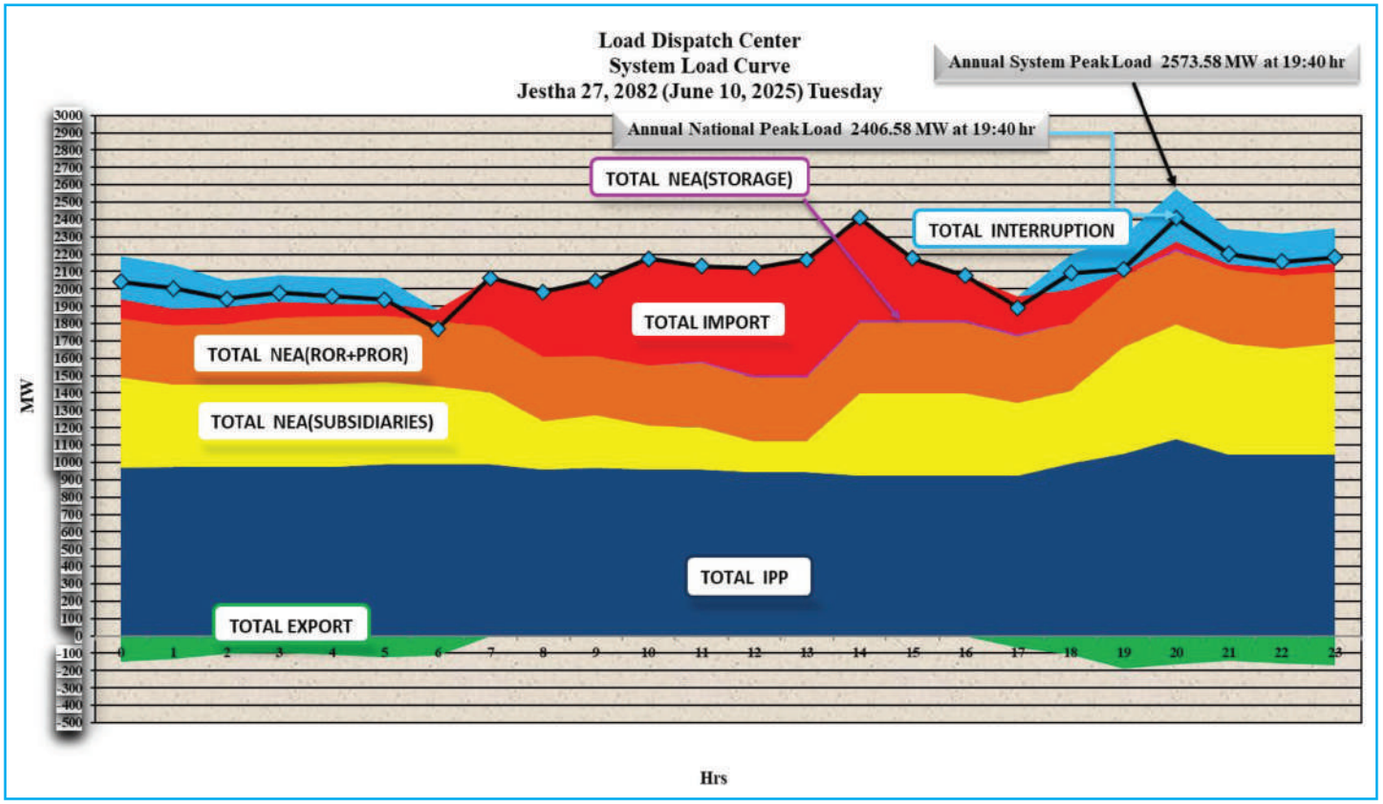
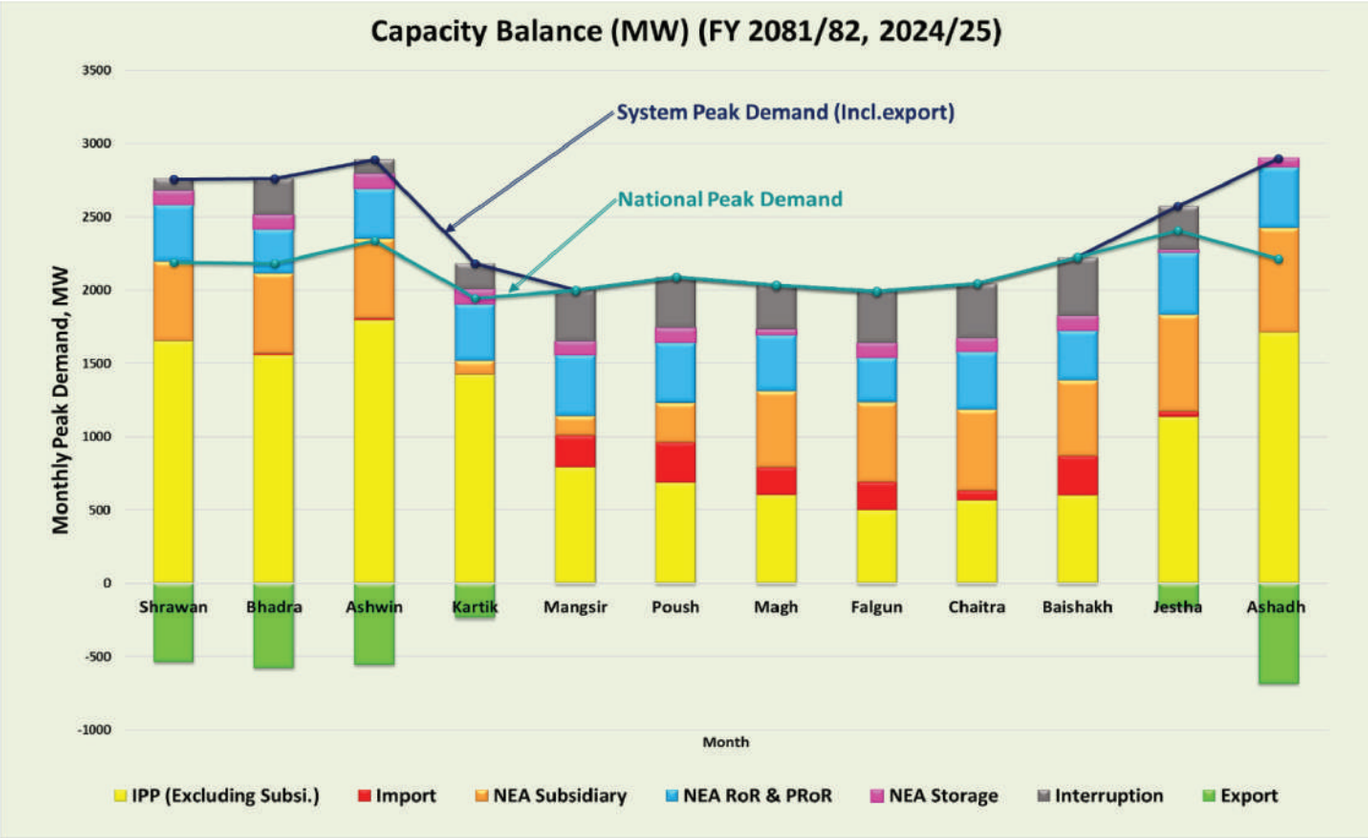


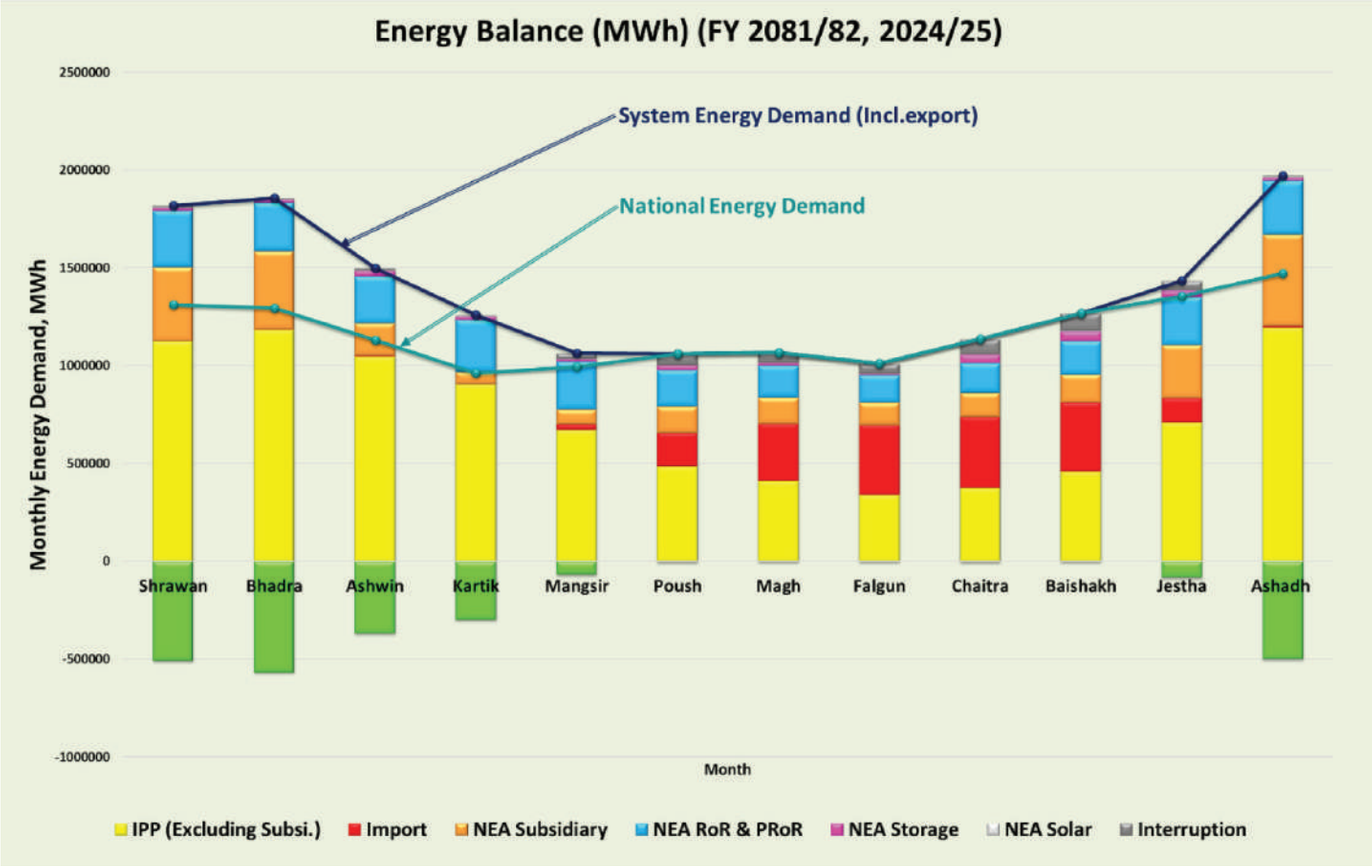
Figure 3: Capacity Balance (MW) in FY 2081/82 (2024/25)



Capacity Balance (MW) of FY 2081/82 (2024/25)

Month	Shrawan	Bhadra	Ashwin	Kartik	Mangsir	Poush	Magh	Falgun	Chaitra	Baishakh	Jestha	Ashadh	AVERAGE
IPP	1652	1553	1791	1424	792	690	604	497	564	599	1134	1711	**1084**
NEA SUBSIDIARY	543	546	545	92	138	267	521	542	552	517	660	711	**470**
NEA ROR & PROR	385	304	346	390	415	413	388	304	394	342	423	417	**377**
IMPORT	0	12	13	0	214	274	184	196	68	268	39	0	**106**
NEA STORAGE	99	95	97	97	93	97	35	102	96	97	18	62	**82**
INTERRUPTION	80	250	100	180	350	350	300	350	370	400	300	0	**253**
MONTHLY NATIONAL PEAK DEMAND	2192	2183	2337	1946	2001	2091	2032	1991	2045	2223	2409	2214	**2139**
EXPORT	537	578	555	237	0	0	0	0	0	0	165	687	**230**
MONTHLY SYSTEM PEAK DEMAND	2759	2761	2892	2184	2001	2091	2032	1991	2043	2223	2574	2901	**2371**

Figure 4: Energy Balance in GWh of FY 2081/82 (2024/25)



Energy Balance (GWh) of FY 2081/82 (2024/25)

Month	Shrawan	Bhadra	Ashwin	Kartik	Mangsir	Poush	Magh	Falgun	Chaitra	Baishakh	Jestha	Ashadh	TOTAL
IPP	1126	1184	1047	905	674	487	411	341	377	460	713	1194	**8918**
NEA SUBSIDIARY	379	399	167	64	75	133	132	114	123	141	271	467	**2464**
NEA ROR & PROR	287	247	239	266	243	188	164	141	152	172	247	272	**2617**
IMPORT	0	2	3	0	30	172	296	357	362	354	124	10	**1712**
NEA STORAGE	15	15	31	18	13	24	12	6	44	50	31	20	**280**
NEA SOLAR	3	3	3	3	2	2	2	3	3	3	3	3	**34**
THERMAL	0	0	0	0	0	0	0	0	0	0	0	0	**0**
INTERRUPTION	9	7	6	3	25	56	51	50	76	89	47	4	**422**
MONTHLY SYSTEM ENERGY DEMAND	1819	1857	1497	1259	1063	1062	1067	1013	1138	1268	1435	1970	**16447**
EXPORT	508	564	366	296	68	0	0	0	1	0	81	497	**2380**
MONTHLY NATIONAL ENERGY DEMAND	1311	1293	1131	963	995	1061	1067	1013	1136	1268	1355	1472	**14067**

Figure 5: Comparison of Daily IEX (MCP) and NEA Power Purchase Price through IEX in FY 2081/82 (2024/25)

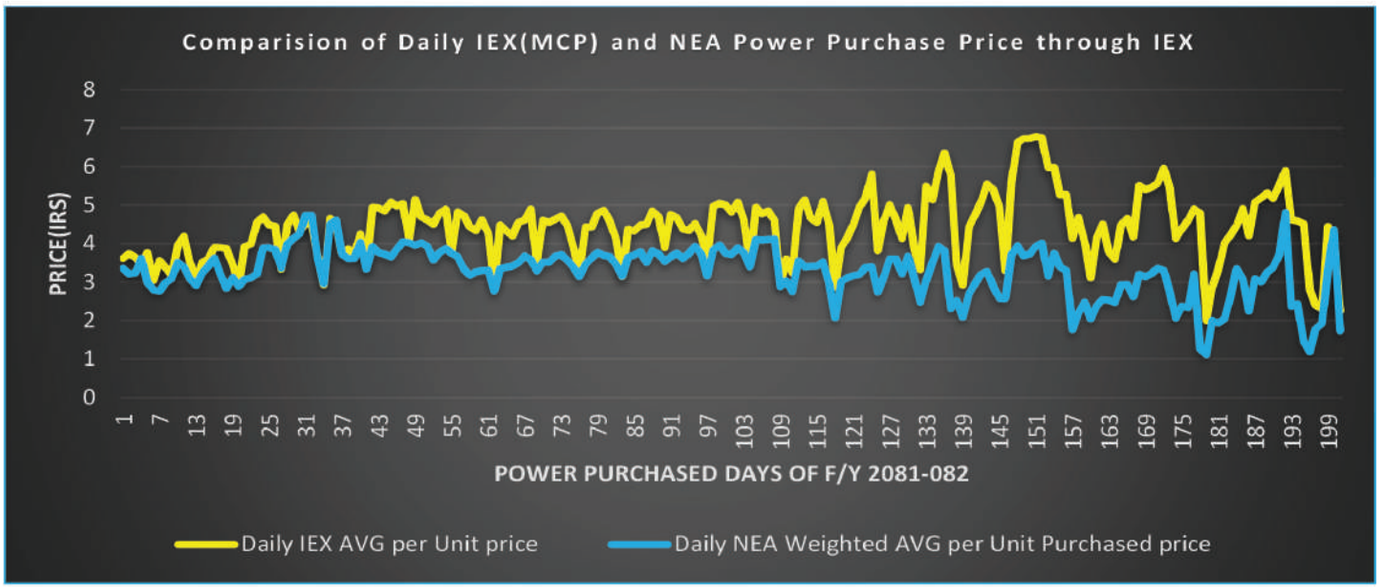


Figure 6: Comparison of Daily IEX (MCP) and NEA Power selling Price through IEX in FY 2081/82 (2024/25)

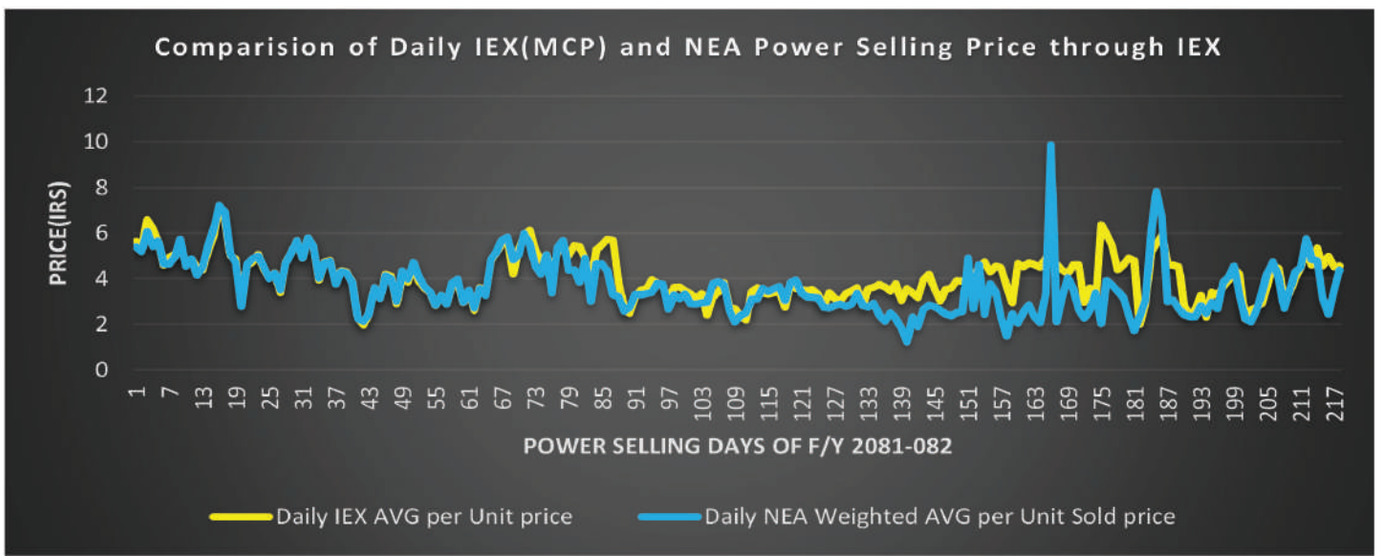
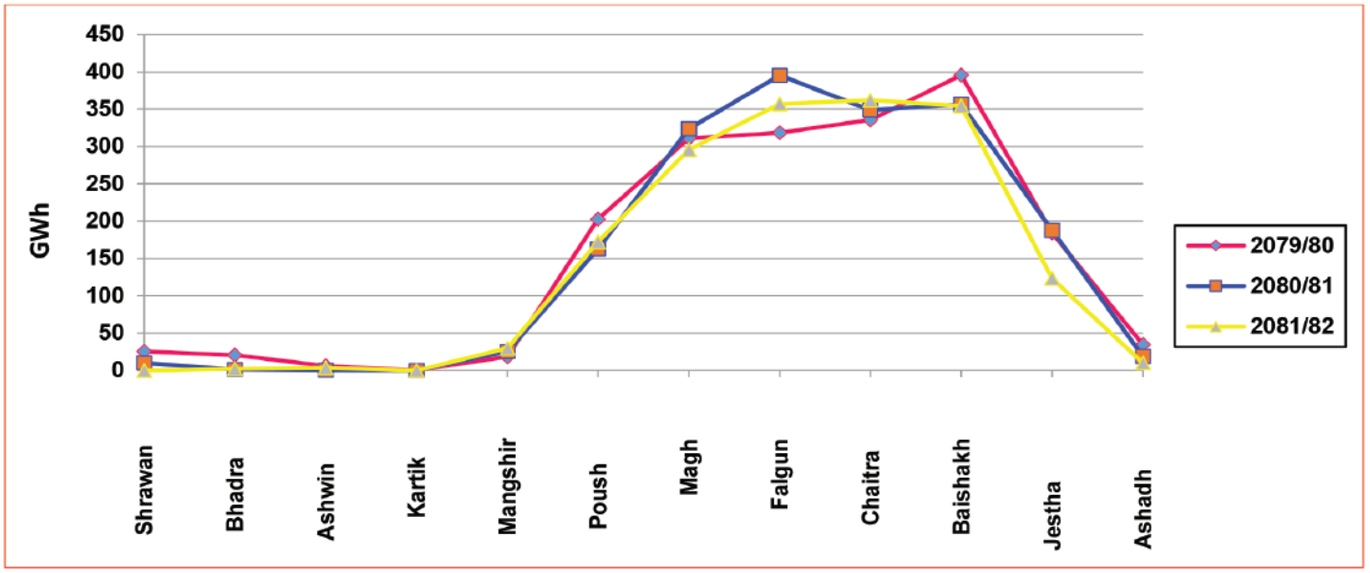
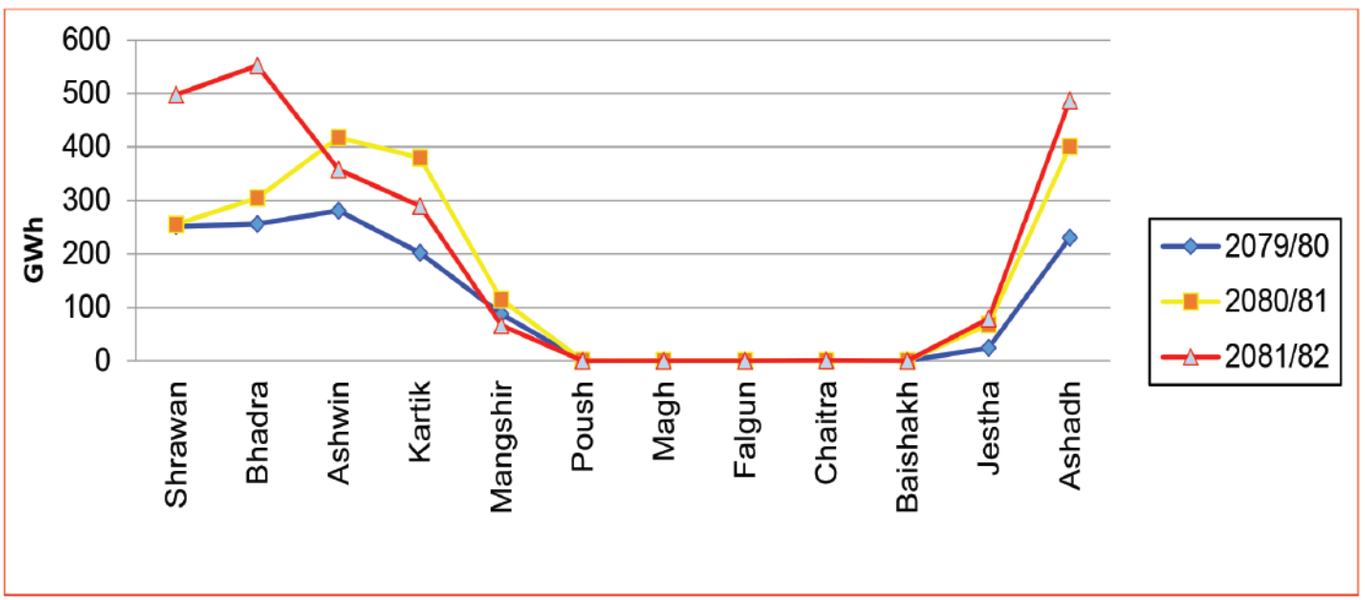


Figure 7: Imported Energy from different lines in FY 2079/80 (2022/23), 2080/81 (2023/24) and 2081/82 (2024/25)



Comparison of Imported Energy(GWh) from India in different FY													
FY	Shrawan	Bhadra	Ashwin	Kartik	Mangshir	Poush	Magh	Falgun	Chaitra	Baishakh	Jestha	Ashadh	Total
2081/82	0.0000	2.4524	3.4053	0.0000	29.7911	172.3379	295.8489	357.3589	362.2620	354.4904	123.5147	10.0657	1711.5272
2080/81	10.3748	1.1828	0.6333	0.0898	25.6803	162.7409	324.0075	395.4887	348.7461	356.9380	187.8506	18.7939	1832.5267
2079/80	25.4615	20.8563	6.1199	0.5194	18.6871	202.8805	310.9881	318.4711	335.5374	395.7281	184.4009	34.8757	1854.5261

Figure 8: Comparison of Exported Energy to India in different FY



Comparison of Exported Energy(GWh) to India in different FY													
FY	Shrawan	Bhadra	Ashwin	Kartik	Mangshir	Poush	Magh	Falgun	Chaitra	Baishakh	Jestha	Ashadh	**Total**
2081/82	497.8630	552.3316	358.2048	289.7869	66.2297	0.1100	0.0000	0.0000	1.0960	0.0000	78.9363	487.1778	**2331.7360**
2080/81	255.5382	304.5849	417.8284	380.0270	114.1699	0.4349	0.0384	0.1009	0.3187	0.3071	67.9286	401.3571	**1942.6340**
2079/80	251.5584	255.6696	280.9730	202.2535	87.8037	0.3867	0.0000	0.0000	0.0000	0.0000	24.2048	230.0673	**1332.9170**

Figure 9: Total System Energy Demand Trend in FY 2079/80 (2022/23), 2080/81 (2023/24) and 2081/82 (2024/25)

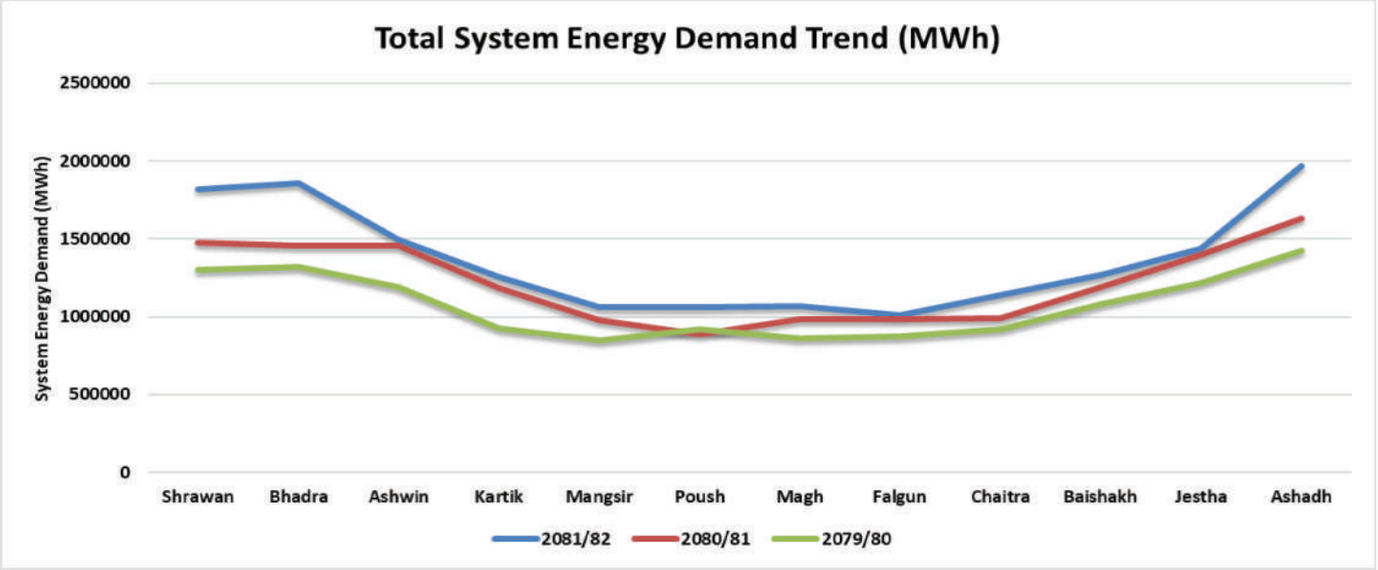
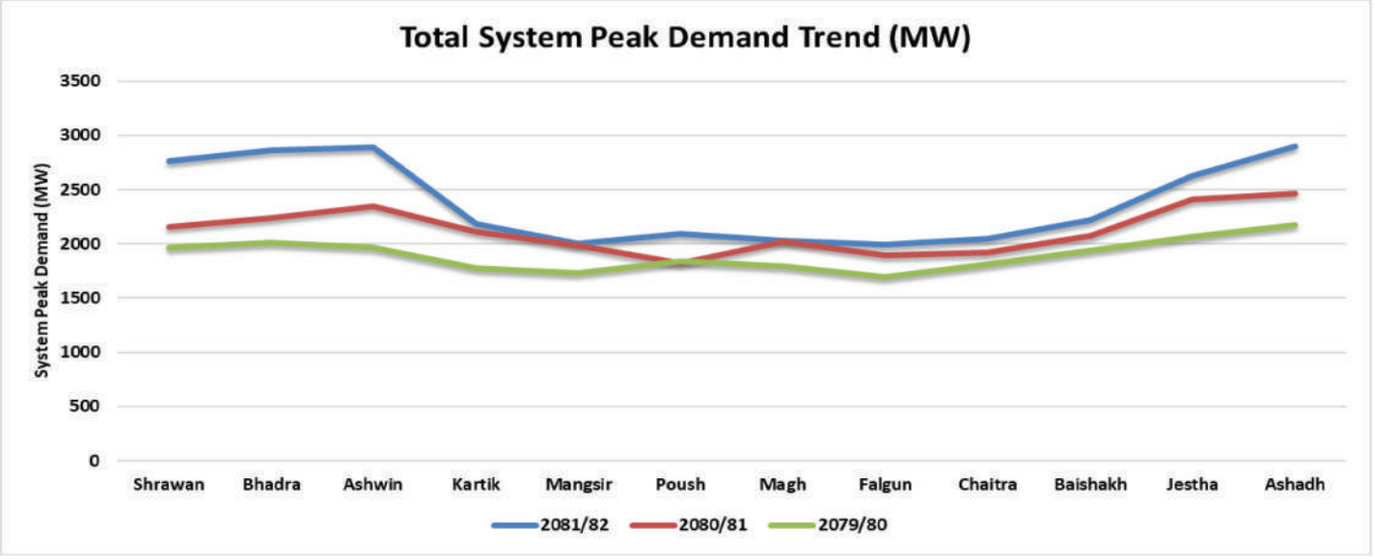


Figure 10: Total System Peak Demand Trend in FY 2079/80 (2022/23), 2080/81 (2023/24) and 2081/82 (2024/25)



ANNEXURE B: LIST OF TABLES

Table 1: Existing high voltage transmission lines

Table 2: Under construction high voltage transmission lines

Table 3: Planned and proposed high voltage transmission lines

Table 4: Existing high voltage grid substations

Table 5: Under construction high voltage grid substations

Table 6: Planned and proposed high voltage grid substations

Table 7: Major ongoing upgradation and reinforcement works of grid substations-Transformer Upgradation

Table 8: Major ongoing upgradation and reinforcement works of grid substations-Capacitor Bank Installation

Table 9: Details of Approved Position and Working Employees under Transmission Directorate

Table 1: Existing high voltage transmission lines

SN	Description	Type of Ckts	Length Circuit km	Conductor Type	Nominal Aluminium Cross Section Area (Sq.mm)
A	**132 kV Transmission Line**				
1	Anarmani-Duhabi	Single	75.76	BEAR	250
2	Kushaha (Nepal)-Kataiya(India)	Single	15.00	BEAR	250
3	Duhabi-Inaruwa-Kushaha	Double	56.00	ACCC Cordoba	250
4	Kushaha-Rupani-Lahan-Mirchaiya-Dhalkebar	Double	276.00	BEAR	250
5	Parwanipur-Pathalaiya-Chapur-Nawalpur-Dhalkebar	Double	200.00	BEAR	250
6	Pathalaiya- Kamane-Hetauda	Double	76.00	ACCC Cordoba	250
7	Bharatpur-Marsyangdi P/S	Single	25.00	DUCK	300
8	Hetauda-Bharatpur	Single	70.00	PANTHER	200
9	Marsyangdi P/S-Suichatar	Single	84.00	DUCK	300
10	Matatirtha- KL2 P/S-Hetauda	Double	80.00	BEAR	250
11	Suichatar-Matatirtha	Double	8.00	ACCC Cordoba	250
12	Suichatar-Balaju	Single	5.00	ACCC Amsterdam	250
13	Balaju-Chapali-New Bhaktapur	Double	36.00	BEAR	250
14	New Bhaktapur-Lamosangu	Double	96.00	BEAR	250
15	Lamosangu-New Khimti	Single	46.00	ACCC Cordoba	250
16	Lamosangu-Bhotekoshi P/S	Single	31.00	BEAR	250
17	Bharatpur-Damauli	Single	39.00	ACCC Copenhegan	150
18	Bharatpur-Kawasoti-Bardghat	Single	70.00	PANTHER	200
19	Bardghat-Gandak P/S	Double	28.00	PANTHER	200
20	Bardghat-Butwal	Double	32.00	BEAR	250
21	New Butwal-Sunwal-Butwal	Double	54.00	ACCC Cordoba	
22	Butwal-KGA P/S	Double	116.00	DUCK	300
23	KGA P/S-Lekhnath	Double	96.00	DUCK	300
24	Lekhnath-Damauli	Single	45.00	WOLF	150
25	Lekhnath-Pokhara	Single	7.00	ACCC Copenhegan	150
26	Pokhara-Modikhola P/S	Single	37.00	BEAR	250
27	Butwal-Shivapur-Lamahi-Kohalpur	Double	430.00	BEAR	250
28	Lamahi-Jhimruk P/S	Single	50.00	DOG	100
29	Kohalpur-Bhurigaun-Lumki	Double	176.66	BEAR	250
30	Lamki-Pahalwanpur-Attariya-Mahendranagar (Lalpur)	Double	203.12	BEAR	250

SN	Description	Type of Ckts	Length Circuit km	Conductor Type	Nominal Aluminium Cross Section Area (Sq.mm)
31	Mahendranagar-Gaddachauki	Single	12.00	BEAR	250
32	Marsyangdi -M. Marsyangdi	Double	80.00	CARDINAL	420
33	Damak-Godak	Double	70.00	BEAR	250
34	Kusum-Hapure	Single	22.00	BEAR	250
35	Bhulbhule- Middle Marsyangdi P/S	Single	22.00	BEAR	250
36	Chameliya- Syaule- Attaria	Double	262.00	BEAR	250
37	Raxual-Parwanipur (Cross Border-Nepal Portion)	Double	32.00	BEAR	250
38	Kusaha-Kataiya (Cross Border-Nepal Portion)	Double	26.00	BEAR	250
39	Dumre Damauli	Double	46.00	BEAR	250
40	Lamahi Ghorahi	Double	25.00	BEAR	250
41	Kushma -Lower Modi	Single	6.20	BEAR	250
42	Godak- Phidim-Amarpur (Kabeli II & III)	Double	113.13	BEAR	250
43	Trishuli 3A-Trishuli 3B Hub	Double	6.00	BISON	350
44	Samundratar - Trishuli 3B Hub	Double	52.00	AAAC Upas	300
45	Singati-Lamosangu	Single	40.00	BEAR	250
46	Solu Corridor (Tingla-Mirchaiya)	Double	180.00	CARDINAL	420
47	New Modi -Lahachwok -Lekhnath	Double	84.00	BEAR	250
48	Motipur-Sandhikharka-Tamghas	Double	104.00	BEAR	250
49	Butwal-Lumbini	Double	32.00	BEAR	250
		Double UG	4.00	1C, XLPE Cu Cable	500
50	Dordi (Kirtipur-Udipur)	Double	20.00	CARDINAL	420
51	Ramechap-Garjyang-Khimti	Double	62.00	BEAR	250
52	Mainahiya Sampatiya (Cross Border-Nepal Portion)	Double	56.00	BEAR	250
53	Bardaghat-Sardi	Double	40	BEAR	250
54	New Hetauda-Old Hetauda	Double	8	BEAR	250
55	Dhalkebar-Loharpatti	Double	38	CARDINAL	420
Total (132 kV)			**4005.87**		
B	**220 kV Transmission Line**				
1	Khimti- Dhalkebar	Double	150.00	BISON	350
2	Trishuli 3B Hub-Matatirtha	Double	98.00	BISON	350
3	Marsyandi (Markichwok)-Matatirtha	Double	164.00	MOOSE	500
4	Matatirtha- Matatirtha Substation	Double Ckt, Underground	2.50	1C, XLPE Cu Cable	1200
		Double Ckt, Underground	2.50	1C, XLPE Cu Cable	1600
5	Dana-Kushma	Double	79.6	MOOSE	500
6	Koshi Corridor (Inaruwa-Basantapur-Baneshwor-Tumlingtar)	Single	106	MOOSE	500

SN	Description	Type of Ckts	Length Circuit km	Conductor Type	Nominal Aluminium Cross Section Area (Sq.mm)
7	Koshi Corridor (Basantapur-Dhungesanghu)	Double	70	MOOSE	500
8	Kushma -New Butwal	Double	176	ACCC Drake	519.7
9	Bharatpur-Bardghat	Double	148	BISON	350
10	New Bharatpur-New Hetauda	Double	143.4	BISON	350
11	Chilime-Trishuli	Double	72	BISON	350
12	New Butwal - Bardaghat TL	Double	42	BISON	350
Total (220 kV)			**1254.00**		
C	**400 kV Transmission Line**				
1	Dhalkebar-Muzzaffarpur (Nepal Portion)	Double	78.00	MOOSE	500
2	Dhalkebar-Inaruwa	Double	306.00	MOOSE	500
Total (400 kV)			**384.00**		
D	**66 kV Transmission Line**				
1	Chilime P/S-Trishuli P/S	Single	39.00	WOLF	150
2	Trisuli P/S-Balaju	Double	58.00	DOG	100
3	Trisuli P/S-Devighat P/S	Single	4.56	WOLF	150
4	Devighat P/S-Okhaltar	Double	53.00	DOG	100
5	Okhaltar-Chapali	Double	5.60	XLPE Cable	500
6	Chapali-New Chabel	Double	10.00	ACCC Silvasa	100
7	New Chabel-Lainchaur	Single	7.00	XLPE Cable	500
8	Balaju-Lainchor	Single	2.00	PANTHER	200
9	Balaju-Siuchatar-KL1 P/S	Double	72.00	WOLF	150
10	KL 1 P/S-Hetauda-Simara	Double	104.00	WOLF	150
11	Simara-Parwanipur-Birgunj	Double	40.00	HTLS INVAR	150
12	Suichatar-Teku	Double	8.20	BEAR	250
13	Suichatar-New Patan	Double	13.00	ACCC Copenhegan	150
14	Teku-K3 (underground)	Double, Single Core	5.60	XLPE Cable	400/500
15	Bhaktapur- Baneshwor-Patan	Single	16.50	ACCC Silvasa	123
16	Bhaktapur-Banepa-Panchkhal-Sunkoshi P/S	Single	48.00	LGJ 120	120
17	Indrawati- Panchkhal	Single	28.00	PANTHER	200
Total (66 kV)			**514.46**		

Table 2: Under construction high voltage transmission lines

S.N.	Transmission Line	Type of Ckts	Length (Circuit km)			Conductor Type	Nominal Aluminium Cross Section Area (Sq. mm)	Expected Completion Year (FY)
			Total	Constructed till FY 81-82	Constructed in FY 81-82 only			
I	**Transmission Directorate**							
A	**132 kV Transmission Line**							
1	Singati-Lamosangu 2nd Circuit	Single	40	40		BEAR	250	2025/26
2	Burtibang-Paudi Amarai-Tamghas	Double	66			BEAR	250	2025/26
3	Kushaha- Biratnagar	Double	46	46	30	BEAR	250	2025/26
4	Kohalpur-Surkhet-Dailekh	Double	168	85	41	BEAR	250	2026/27
5	Balefi Corridor	Double	40			CARDINAL	420	2025/26
6	Dhalkebar- Balganga	Double	48			CARDINAL	420	2025/26
7	Kaligandaki- Ridi	Double	44	10	10	BEAR	250	2025/26
8	Nawalpur (Lalbandi) Salimpur	Double	40			BEAR	250	2025/26
9	Bhumahi-Hakui	Double	32			BEAR	250	2025/26
10	Kabeli (Amarpur) Dhungesangu	Double	40			BEAR	250	2025/26
11	Godak Soyak	Double	16			BEAR	250	2025/26
12	Kushma -Lower Modi -Modi	Double	30			BEAR	250	2025/26
13	Birgunj-Parsauni UG	Double	5.6	5.6	5.6	1C, XLPE Cu Cable		2025/26
14	Barhabise Lamosaghu 2nd Circuit (Sunkoshi 132 kV SS)	Single	12			BEAR	250	2025/26
15	Nepalgunj-Nanpara Cross Border	Double	33			BEAR	250	2025/26
16	Bafikot-Madichaur (Khungri)	Double	150			BEAR	250	2025/26
Total			**811**	**187**	**87**			
B	**220 kV Transmission Line**							
1	Tumlingtar-Sitalpati	Double	36			MOOSE	500	2025/26
2	Lekhnath-Damauli	Double	90.00			MOOSE	500	2027/28
3	Galchhi - Ratmate	Double	34.00			MOOSE	500	2026/27
Total			**160**	**0**	**0**			
C	**400 kV Transmission Line**							
1	Hetauda-Dhalkebar	Double	270	230	126	MOOSE	500	2025/26
Total			**270**	**230**	**126**			
II	**Project Management Directorate**							
A	**132 kV Transmission Line**							
1	Lapsifedi - Changunarayan - Duwakot	Double	28	0	0	BEAR	250	
2	Parwanipur - Pokhariya **	Double	84	0	0	ACCC Amsterdam	376	2027/28

S.N.	Transmission Line	Type of Ckts	Length (Circuit km)			Conductor Type	Nominal Aluminium Cross Section Area (Sq. mm)	Expected Completion Year (FY)
			Total	Constructed till FY 81-82	Constructed in FY 81-82 only			
3	Bhaktapur - Thimi - Balkumari**	Double	24	0	0	Single Core XLPE	800 sq. MM Cu	2027/28
4	Dandakhet - Rahughat	Double	50	0	0	CARDINAL	420	2025/26
5	Ghorahi - Madichaur	Double	80	0	0	CARDINAL	420	2026/27
6	Borang - Lapang	Double	48	0	0	BEAR	250	2027/28
7	Chobhar Patan **	Double	9	0	0	Single Core XLPE	800 sq. MM Cu	2025/26
8	Kohalpur Nepalgunj	Double	20	0	0	BEAR	250	2026/27
	Total		**343**					
B	**220 kV Transmission Line**							
1	Dharapani - Khudi TL	Double	56	0	0	Moose	500	2026/27
2	Khudi - Udipur TL	Double	36	0	0	ACCC Drake	519.7	2025/26
3	Udipur - Bharatpur TL	Double	134	12	6	ACCC Drake	519.7	2025/26
4	Lapang - Ratmate TL**	Double	48	0	0	Twin Moose	500	2026/27
Total			**274**	**12.0**	**6.0**			
C	**400 kV Transmission Line**							
1	New Khimti - Barhabise	Double	84	84	14	MOOSE	500	2025/26
2	Barhabise - Kathmandu	Double	92	89	3	MOOSE	500	2025/26
Total			**176**	**173**	**17**			
	(Note : ** - In the process of Procurement)							

Details of underconstruction/planed & proposed Transmission Line

S.N	Description	Voltage Level	Transmission Directorate	Project Management Directorate	Total
1	Under construction Transmission Line (Circuit km)	132 kV	811	343	1154
		220 kV	160	274	434
		400 kV	270	176	446
Total (Circuit km)			**1241**	**793**	**2034**
2	Planed and Proposed Transmission Line (Circuit km)	132 kV	840	268	1108
		220 kV	1894	0	1894
		400 kV	1717	1886	3603
Total (Circuit km)			**4451**	**2154**	**6605**

Table 3: Planned and proposed high voltage transmission lines

S.N.	Description	Type of Ckts	Length Circuit km	Conductor Type	Nominal Aluminium Cross Section Area (Sq. mm)
I	**Transmission Directorate**				
A	**400 kV Transmission Line**				
1	Arun Hub (Sitalpati)- Inaruwa	Double	188.00	MOOSE	500
2	Inaruwa Anarmani	Double	179.20	MOOSE	500
3	Arun Hub-Tingla	Double	152.00	MOOSE	500
4	Tingla-Dudhkoshi	Double	70.00	MOOSE	500
5	Dudhkoshi-Dhalkebar	Double	160.00	MOOSE	500
6	Nijgadh -Harniya	Multi	140.00	MOOSE	500
7	Harnaiya-Bodebarsain	Multi	708.00	MOOSE	500
8	Inaruwa - Purnia	Double	50.00	MOOSE	500
9	Lamki (Dododhara) - Bareli	Double	70.00	MOOSE	500
Total			**1717.20**		
B	**220 kV Transmission Line**				
1	Koshi Corridor (Inaruwa-Basantapur-Baneshwor-Tumlingtar)	Single	106	MOOSE	500
2	Dhaubadi Iron Mine	Double	16.00	BISON	350
3	Gandak Nepalgunj	Multi	1276.00	MOOSE	500
4	Kathmandu Valley Transmission System Expansion	Multi, Double	320.00		
5	Chilime-Kerung	Double	52.00	MOOSE	500
6	Chameliya-Jauljibi	Double	64.00	MOOSE	500
7	Lapan-Budigandaki	Double	60.00	MOOSE	500
Total			**1894.00**		
C	**132 kV Transmission Line**				
1	Attariya- Dhangadi	Double	36.00	BEAR	250
2	Auraha-Simara	Double	12.00	BEAR	250
3	Dhaubadi-Meghauli	Double	30.00	BEAR	250
4	Damak-Keraun-Biratnagar (Barju)	Double	130.00	BEAR	250
5	Rupani-Bodebarsain	Double	36.00	BEAR	250
6	Lahan Sukhipur	Double	34.00	BEAR	250
7	Chandrapur-Sukhdevchaur (Rajpur)	Double	70.00	BEAR	250
8	Godak -Anarmani	Double	116.00	BEAR	250
9	Samundratar-Lapsifedi	Double	56.00	BEAR	250
10	Dadakhet-Burtibang	Double	70.00	BEAR	250
11	Kamane-Faparbari (Jhurjhure)	Double	90.00	BEAR	250
12	Shyaule-Safebagar	Double	160.00	BEAR	250
Total			**840.00**	BEAR	250

S.N.	Description	Type of Ckts	Length Circuit km	Conductor Type	Nominal Aluminium Cross Section Area (Sq. mm)
II	**Project Management Directorate**				
A	**400 kV Transmission Line**				
1	Nijgadh - Ramauli	Double	76.00	MOOSE	500
2	New Butwal-Lamahi	Double	340.00	MOOSE	500
3	Lamahi-New Kohalpur	Double	180.00	MOOSE	500
4	New Kohalpur-Dododhara	Double	190.00	MOOSE	500
5	Dododhara(New Lamki)-New Attariya (Daiji)	Double	180.00	MOOSE	500
6	Tingla Hub-Likhu Hub- New Khimti	Double	110.00	MOOSE	500
7	New Khimti-Tamakoshi 3-Sunkoshi Hub-Dhalkebar	Double	220.00	MOOSE	500
8	Budhigandaki Corridor (Philim-Gumda-Ratamate)	Double	190.00	MOOSE	500
9	Damauli-Kusma-Burtibang-Bafikot	Double	400.00	MOOSE	500
	Total:		**1886.00**		
B	**220 kV Transmission Line**				
1	Okharpauwa-Tinpiple (LILO of existing UT3A-Matatirtha Line)	Multi	16	BISON	350
	Total:		**16.00**		
B	**132 kV Transmission Line**				
1	Dailekh - Kalikot - Jumla	Double	164.00	BEAR	250
2	Lamosangu - Kavre/Ramechhap	Double	80.00	BEAR	250
3	LILO of Nepalgunj-Nanpara Line	Multi	24.00	BEAR	250
Total			**268.00**		

Table 4: Existing high voltage grid substations

S.No	Substation	Voltage Ratio	Capacity FY 080-81	Capacity FY 081-82	Total Increment in FY 081-82
		kV	MVA	MVA	(MVA)
A	Kathmandu Grid Division				
1	Balaju	132/66	45	45	0
		66/11	22.5	22.5	0
		66/11	22.5	22.5	0
		66/11	22.5	22.5	0
2	Chapali	132/11	45	45	0
		132/11	45	45	0
		132/66	49.5	49.5	0
		132/66	49.5	49.5	0
3	Siuchatar	132/66	37.8	37.8	0
		132/66	37.8	37.8	0
		132/66	37.8	37.8	0
		132/11	30	30	0
		66/11	18	18	0
		66/11	18	18	0
4	New Chabel	66/11	22.5	22.5	0
		66/11	22.5	22.5	0
		66/11	22.5	22.5	0
		66/11	22.5	22.5	0
5	Lainchour	66/11	30	30	0
		66/11	30	30	0
6	New Patan	66/11	30	30	0
		66/11	30	30	0
		66/11	30	30	0
		66/11	30	30	0
7	Teku	132/11	45	45	0
		132/11	45	45	0
		66/11	45	45	0
		66/11	45	45	0
8	K3	66/11	22.5	22.5	0
		66/11	22.5	22.5	0
9	Baneshwor	66/11	30	30	0
		66/11	30	30	0

S.No	Substation	Voltage Ratio kV	Capacity FY 080-81 MVA	Capacity FY 081-82 MVA	Total Increment in FY 081-82 (MVA)
10	Bhaktapur	132/66	49.5	49.5	0
		132/66	49.5	49.5	0
		132/11	45	45	0
		132/11	45	45	0
		132/11	45	45	0
11	Banepa	66/11	22.5	22.5	0
		66/11	22.5	22.5	0
12	Panchkhal	66/11	10	10	0
13	Matatirtha	220/132	53.33	53.33	0
		220/132	53.33	53.33	0
		220/132	53.33	53.33	0
		220/132	53.33	53.33	0
		220/132	53.33	53.33	0
		220/132	53.33	53.33	0
		132/33	30	30	0
		132/11	22.5	22.5	0
		132/11	45	45	0
14	Bagmati	66/33	10		-10
		66/11	6		-6
15	Samundratar	132/33	30	30	0
		132/33	30	30	0
		33/11	8	8	0
		33/11	8	8	0
16	Trishuli 3B HUB	220/132	53.33	53.33	0
		220/132	53.33	53.33	0
		220/132	53.33	53.33	0
		220/132	53.33	53.33	0
		220/132	53.33	53.33	0
		220/132	53.33	53.33	0
		132/33	50	50	0
17	Chilime HUB	220/132	53.33	53.33	0
		220/132	53.33	53.33	0
		220/132	53.33	53.33	0
		220/132	53.33	53.33	0
		220/132	53.33	53.33	0
		220/132	53.33	53.33	0
		132/33	50	50	0
18	Malekhu	132/33		30	30
		132/33		30	30
19	Mulpani	132/11		45	45
		132/11		45	45

S.No	Substation	Voltage Ratio kV	Capacity FY 080-81 MVA	Capacity FY 081-82 MVA	Total Increment in FY 081-82 (MVA)
B	Hetauda Grid Division				
20	Hetauda	132/66	45	45	0
		132/66	45	45	0
		66/11	10	10	0
		66/11	30	30	0
21	Kamane	132/33	63	63	0
		132/33	30	30	0
		33/11	24	24	0
		33/11	16.6	16.6	0
22	Bharatpur	132/33	30	30	0
		132/33	30	30	0
		132/11	22.5	22.5	0
		132/11	22.5	22.5	0
23	New Bharatpur	220/132	160	160	0
		220/132	160	160	0
		132/11	30.0	30.0	0
		132/11		45.0	45
24	Birgunj	66/33	30	30	0
		66/33	30	30	0
		66/11	30	30	0
		66/11	30	30	0
25	Parwanipur	132/11	22.5	22.5	0
		132/11	22.5	22.5	0
		132/11	22.5	22.5	0
		132/11	22.5	22.5	0
		132/66	63	63	0
		132/66	63	63	0
		132/66	63	63	0
		132/33	63	63	0
26	Simra	66/11	15	15	0
		66/11	15	15	0
27	Amlekhgunj	132/66		100	100
		132/66		100	100
		66/11	10	10	0
28	Pathlaiya	132/11	22.5	22.5	0
		132/33	30	30	0
29	Purbi Chitwan	132/33	30	30	0
		132/33	30	30	0
		33/11	16.6	16.6	0

S.No	Substation	Voltage Ratio kV	Capacity FY 080-81 MVA	Capacity FY 081-82 MVA	Total Increment in FY 081-82 (MVA)
30	New Hetauda	400/220	166.67	166.67	0
		400/220	166.67	166.67	0
		400/220	166.67	166.67	0
		220/132	160	160	0
		220/132	160	160	0
		132/11	10	10	0
31	Kulekhani	66/11		22.5	22.5
C	Dhalkebar Grid Branch				
32	Lahan	132/33	30	30	0
		132/33	63	63	0
		33/11	16.6	16.6	0
		33/11	16.6	16.6	0
33	Chapur	132/33	63	63	0
		132/33	63	63	0
		33/11	16.6	16.6	0
34	Dhalkebar	400/220	315	315	0
		400/220	315	315	0
		400/220	315	315	0
		220/132	315	315	0
		220/132	315	315	0
		220/132	160	160	0
		220/132	160	160	0
		132/33	63	63	0
		132/33	63	30	-33
		33/11	16.6	16.6	0
		33/11	16.6	16.6	0
35	Mirchaiya	132/33	30	30	0
		132/33	30	30	0
		33/11	16.6	16.6	0
36	Nawalpur	132/33	63	63	0
		33/11	16	16	0
37	Rupani	132/33	63	63	0
38	Loharpatti	132/33		60	60
		132/11		22.5	22.5
D	Duhabi Grid Division				
39	Tingla	132/33	30	30	0
		33/11	8	8	0

S.No	Substation	Voltage Ratio kV	Capacity FY 080-81 MVA	Capacity FY 081-82 MVA	Total Increment in FY 081-82 (MVA)
40	Duhabi	132/33	63	63	0
		132/33	63	63	0
		132/33	63	63	0
		132/33	63	63	0
		33/11	24	24	0
		33/11	24	24	0
41	Anarmani	132/33	30	30	0
		132/33	63	63	0
		132/33	30	30	0
		33/11	24	24	0
		33/11	24	24	0
42	Damak	132/33	63	63	0
		132/33	63	63	0
		33/11	16.6	16.6	0
		33/11	16.6	16.6	0
43	Godak	132/33	63	63	0
		33/11	8	8	0
44	Phidim	132/33	20	20	0
		33/11	3	3	0
45	Amarpur (Kabeli)	132/33	30	30	0
		33/11	3	3	0
46	Kushaha	132/11	22.5	22.5	0
47	Inaruwa	400/220	315	315	0
		400/220	315	315	0
		400/220	315	315	0
		220/132	160	160	0
		220/132	160	160	0
		220/33	63	63	0
		220/33	63	63	0
48	Tumlingtar	220/132	100	100	0
		220/132	100	100	0
		132/33	30	30	0
		132/33	30	30	0
49	Baneshwor	220/33	30	30	0
		220/33	30	30	0

S.No	Substation	Voltage Ratio kV	Capacity FY 080-81 MVA	Capacity FY 081-82 MVA	Total Increment in FY 081-82 (MVA)
50	Basantapur	220/132	33.33	33.33	0
		220/132	33.33	33.33	0
		220/132	33.33	33.33	0
		220/132	33.33	33.33	0
		220/132	33.33	33.33	0
		220/132	33.33	33.33	0
		132/33	30	30	0
51	Dhungesanghu	132/33	30	30	0
E	Butwal Grid Division				
52	Butwal	132/33	63	63	0
		132/33	63	63	0
		132/33	63	63	0
		33/11	24.0	24.0	0
		33/11	16.6	16.6	0
		33/11	16.6	16.6	0
53	Bardghat	132/11	22.5	22.5	0
		132/11	22.5	22.5	0
54	Chanauta	132/33	30	30	0
		132/33	30	30	0
		33/11	16.6	16.6	0
		33/11	8	8	0
55	Kawasoti	132/33	30	30	0
		132/33	30	30	0
		33/11	16.6	16.6	0
56	Gandak	132/33	30	30	0
		132/33	30	30	0
		33/11	16.6	16.6	0
		33/11	16.6	16.6	0
57	Motipur	132/33	30	30	0
		33/11	16	16	0
58	Sandhikharka	132/33	30	30	0
		33/11	16	16	0
59	Mainahiya	132/33	45	45	0
		132/33	45	45	0
		33/11	16	16	0
60	New Butwal	220/132	100	100	0
61	Sunwal	132/33	63	63	0
		132/33	63	63	0
		132/11	22.5	22.5	0

S.No	Substation	Voltage Ratio kV	Capacity FY 080-81 MVA	Capacity FY 081-82 MVA	Total Increment in FY 081-82 (MVA)
62	Tamghas	132/33	30	30	0
		33/11	16	16	0
63	Paudi Amarai	132/33		30	30
		33/11		16	16
64	Burtibang	132/33		30	30
		33/11		16	16
F	Pokhara Grid Division				
65	Damauli	132/33	30	30	0
		132/33	15	15	0
		33/11	16.6	16.6	0
		33/11	3	3	0
66	Pokhara	132/11	30	30	0
		132/11	30	30	0
67	Lekhnath	132/33	30	30	0
		132/11	22.5	22.5	0
		132/11	30	30	0
68	Markichowk	220/132		53.33	53.33
		220/132		53.33	53.33
		220/132		53.33	53.33
		220/132		53.33	53.33
		220/132		53.33	53.33
		220/132		53.33	53.33
		132/33	12	12	0
69	Syangja	132/33	30	30	0
		33/11	8	8	0
70	Dana	220/132	100	100	0
		132/33	25	25	0
71	Kushma	220/132	100	100	0
72	Lahachowk	132/33	30	30	0
		33/11	8	8	0
73	Kirtipur	132/11	10	10	0
74	Udipur	220/132		53.33	53.33
		220/132		53.33	53.33
		220/132		53.33	53.33
		132/33		50	50
G	Attaria Grid Division				
75	Attaria	132/33	63.0	63.0	0
		132/33	63.0	63.0	0
		33/11	16.6	16.6	0
		33/11	16.6	16.6	0

S.No	Substation	Voltage Ratio kV	Capacity FY 080-81 MVA	Capacity FY 081-82 MVA	Total Increment in FY 081-82 (MVA)
76	Lamki	132/33	15	15	0
		132/33	15	15	0
		33/11	16.6	16.6	0
77	Mahendranagar	132/33	30	30	0
		132/33	30	30	0
		132/33	30	30	0
		33/11	16.6	16.6	0
78	Pahalmanpur	132/33	30	30	0
		33/11	8	8	0
79	Syaule	132/33	30	30	0
		33/11	8	8	0
H	Khimti Grid Section				
80	New Khimti	220/132	66.67	66.67	0
		220/132	66.67	66.67	0
		220/132	66.67	66.67	0
		220/132	100	100	0
		132/33	30	30	0
		132/33	30	30	0
81	Singati	132/33	30	30	0
82	Garjyang	132/33	30	30	0
		33/11	8	8	0
83	Indrawati	66/11	10	10	0
84	Lamosanghu	132/33	63	63	0
I	Kohalpur Grid Section				
85	Kohalpur	132/33	63	63	0
		132/33	63	63	0
		33/11	16.6	16.6	0
		33/11	16.6	16.6	0
86	Bhurigaon	132/33	30	30	0
		33/11	8	8	0
87	Kusum	132/11	12.5	12.5	0
88	Hapure	132/33	30	30	0
		33/11	8	8	0

S.No	Substation	Voltage Ratio kV	Capacity FY 080-81 MVA	Capacity FY 081-82 MVA	Total Increment in FY 081-82 (MVA)
89	Lamahi	132/33	63	63	0
		132/33	63	63	0
		33/11	16.6	16.6	0
		33/11	8	8	0
90	Ghorahi	132/33	63	63	0
		132/33	30	30	0
		33/11	16.6	16.6	0

S.No	Voltage Rating (kV)	Transformer No.	Capacity FY 080-81	Capacity FY 081-82	Total Increment (MVA)
1	400/220	9	2390	2390	0
2	220/132	52	3870	4350	480
3	220/33	4	186	186	0
4	132/66	14	635	835	200
5	132/33	89	3532	3729	197
6	132/11	31	835	993	158
7	66/33	3	70	60	-10
8	66/11	34	780	796	17
9	33/11	54	752	784	32
	Total	290	13050	14123	1073

Table 5: Under construction high voltage grid substations

S.No	Name of Project	Substation	Voltage Level (Ratio)	Capacity	Total Capacity	Expected Completion Year
			kV	MVA	MVA	AD
I	**Transmission Directorate**					
1	Kushaha Biratnagar 132 kV Transmission Line	Biratnagar	132/33 33/11	3 Ø, 2x63 3 Ø, 16	142	2025/26
2	Tumlingtar Sitalpati 220 kV Transmission Line	Sitalpati	220/132 132/33	1 Ø, 7x33.33 Bank 1 Ø, 4x8 Bank	224	2025/26
3	Kaligandaki Ridi132 kV Transmission Line	Ridi	132/33 33/11	3 Ø, 30 3 Ø, 8	38	2025/26
4	Lalbandi Salimpur 132 kV Transmission Line	Salimpur	132/33 33/11	3 Ø, 2x30 3 Ø, 1x24	84	2025/26
5	Dhalkebar Balganga 132 kV Transmission Line	Balganga	132/33	3 Ø, 2x63	126	2025/26
6	Bhumahi Hakui132 kV Transmission Line	Hakui	132/33 33/11	3 Ø, 2x100 3 Ø, 1x16.5	216.5	2025/26
8	Lekhnath Damauli 220 kV Transmission Line	Lekhnath	220/132	1 Ø, 7x100 Bank	600	2027/28
		Damauli	220/132	3 Ø, 2x63	126	2027/28
			132/33	3 Ø, 2x30	60	2027/28
			33/11	3 Ø, 2x8	16	2027/28
9	Birgunj Parsauni 132 kV UG Transmission Line	Parsauni	132/33 33/11	3 Ø,2x100 3 Ø,2x24	248	2025/26
		Birgunj	132/66	3 Ø,2x100	200	2025/26
10	New Khimti - Lamosanghu Kathmandu Transmission Line Upgradation	New Khimti	220/132	1 Ø, 3x66.67 Bank	200	2026/27
11	Surkhet 132 kV Substation	Surkhet	132/33	3 Ø,2x30	60	2025/26
12	Kohalpur - Surkhet-Dailekh 132 kV Transmission Line	Dailekh	132/33 33/11	3 Ø,2x30 3 Ø,2x22.5	105	2025/26
Total					**2,445.50**	
II	**Under Project Management Directorate**					
1	220 kV Bahrabise Substation	Barhabise	220/132	1 Ø, 4x53.33	165	2025/26
			132/11	3 Ø, 1x5		2025/26
2	Kathmandu Valley Transmission Capacity Reinforcement Project	Chobhar	132/11	3 Ø, 2x45	90	2025/26
		Futung	132/11	3 Ø, 2x45	90	2025/26
		Thimi	132/11	3 Ø, 2x45	90	2025/26
3	Marsyangdi Corridor 220 kV TL Project	Khudi	220/132	1 Ø, 4x53.33	210	2025/26
			132/33	3 Ø, 1x50		2025/26
		Dharapani	132/33	1 Ø, 4x33.33	130	2027/28
			132/33	3 Ø, 1x30		2027/28

S.No	Name of Project	Substation	Voltage Level (Ratio)	Capacity	Total Capacity	Expected Completion Year
			kV	MVA	MVA	AD
4	Lapsiphedi and Changunarayan SS Project	Lapsiphedi	220/132	1 Ø, 4x53.33	182.5	2025/26
			132/11	3 Ø, 1x22.5		2025/26
		Changunarayan	132/11	3 Ø, 1x45	45	2025/26
		Teku	132/66	3 Ø, 1x63	63	2025/26
5	New Khimti - Barhabise - Lapsiphedi 400 kV SS Project	New Khimti	400/220	1 Ø, 7x105	630	2025/26
		Barhabise	400/220	1 Ø, 7x53.33	320	2025/26
		Lapsiphedi	400/220	1 Ø, 4x105	315	2025/26
6	Parwanipur - Pokhariya 132 kV TL Project**	Pokhariya	132/33	3 Ø, 2x63	171	2027/28
			132/11	3 Ø, 1x45		2027/28
7	Kathmandu Valley Transmission Capacity Reinforcement Project (Phase II)**	Balkumari	132/66	3 Ø, 2x63	216	2027/28
			132/11	3 Ø, 2x45		2027/28
8	Borang-Lapang 132 kV and Lapang-Ratmate 220 kV Transmission Line and Substation project	Borang	132/33	3 Ø, 30	30	2027/28
		Lapang	220/132 132/33	1 Ø, 7x33.33 3 Ø, 30	230	2027/28
9	Ghorahi Madichaur 132 kV Transmission Line	Madichaur	132/33	3 Ø, 30	30	2026/27
10	Dadakhet Rahughat132 kV Transmission Line	Dadakhet	132/33	3 Ø, 30	30	2025/26
		Rahughat	220/132 132/33	1 Ø, 7x33.33 3 Ø, 30	230	2025/26
11	132 kV Pangtang Substation	Pangtang	132/33	3 Ø, 30	30	2026/27
12	132 kV Keraun Substation	Keraun	132/33	3 Ø, 2x63	148.5	2025/26
			132/11	3 Ø, 22.5		2025/26
14	132 kV Dumkibas Substation	Dumkibas	132/33	3 Ø, 2x30	60	2025/26
16	132 kV Bakaspur Substation	Bakaspur, Nepalgunj	132/33	3 Ø, 2x63	126	2026/27
17	132 kV New Patan substation **	New Patan	132/66	3 Ø, 2x63	261	2025/26
			132/11	3 Ø, 3x45		2025/26
Total					**3893**	

Table 6: Planned and proposed construction high voltage grid substations

S.No	Name of Project	Substation	Voltage Level (Ratio)	Capacity	Total Capacity
			kV	MVA	MVA
I	**Transmission Directorate**				
1	Dhaubadi Iron Mine 220 kV Transmission Line	Dhaubadi	220/132 132/33	3 Ø, 2x160 3 Ø, 2x63	446
2	Dharan 220/33 kV substation	Dharan	220/33 33/11	3 Ø, 63 3 Ø, 10	73
3	Palpa 220 kV Substation	Palpa	220/132 132/33 33/11	1 Ø,7x53.33 3 Ø,2x63 3 Ø,2x16	478
4	Godak Anarmani 132 kV Transmission Line	Anarmani	132/33	3 Ø, 2x63	126
5	Lahan - Sukhipur 132 kV Transmission Line	Sukhipur	132/33	3 Ø,2x30	60
6	Rupani - Bodebarsain 132 kV Transmission Line	Bodebarsain	132/33	3 Ø,2x30	60
7	Chandrapur - Sukhdevchaur 132 kV Transmission Line	Sukhdevchaur	132/33	3 Ø,2x63 3 Ø,25	151
8	Birauta 132 kV Substation	Birauta	132/11	3 Ø,2x30	60
9	Syaule-Safebagar 132 kV Transmission Line	Safebagar	132/33 33/11	3 Ø,2x30 3 Ø,1x16	76
10	Bafikot-Khungri (Madichaur) 132 kV Transmission Line	Ghartigaun	132/33 33/11	3 Ø,1x30 3 Ø,1x16	46
11	Kathmandu Valley System Reinforcement	Ratnapark	132/11	3 Ø,2x45	90
		Singhdarbar (k3)	132/11	3 Ø,2x45	90
		Maharajgunj	132/11	3 Ø,2x45	90
		Sirutar	132/11	3 Ø,2x30	60
12	Attariya Dhangadhi 132 kV Transmission Line	Dhangadhi	132/33 33/11	3 Ø,2x63 3 Ø,1x22.5	148.5
13	Auraha Simara 132 kV Transmission Line	Auraha	132/33 33/11	3 Ø,2x63 3 Ø,2x22.5	171
14	Dhaubadi-Meghauli 132kV Transmission Line	Gaidakot	132/33 33/11	3 Ø,2x30 3 Ø,1x22.5	82.5
		Meghauli	132/33 33/11	3 Ø,2x63 3 Ø,1x22.5	148.5
15	Kathmandu Valley Transmission System Expansion	Agreegate	220, 132 and 66 kV		4129
16	Nijgadh 400 kV Substation	Nijgadh	400/220 220/132 132/33	3 Ø,2x500 3 Ø,2x200 3 Ø,2x63	1526
17	Nijgadh-Harnaiya 400 kV Transmission Line	Harnaiya	220/132 132/33	3 Ø,2x200 3 Ø,2x63	526
18	Harnaiya-Bodhebarsain 400 kV Transmission Line	Bodebarsain	400/132	3 Ø,2x315	630

S.No	Name of Project	Substation	Voltage Level (Ratio) kV	Capacity MVA	Total Capacity MVA
Total					**9267.5**
I	**Project Managment Directorate**				
4	New Butwal - Lamahi - Kohalpur - New Lamki - New Attariya 400 kV Transmission Line	Lamahi	400/220/132	630	720
			132/11	90	
		New Kohalpur	400/220/132	630	720
			132/11	90	
		New Attariya	400/220/132	630	720
			132/11	90	
5	Tingla Hub-Likhu Hub- New Khimti 400 kV Transmission Line	Likhu Hub	400/220/132	630	630
6	New Khimti-Tamakoshi 3-Sunkoshi Hub-Dhalkebar 400 kV Transmission Line	Sunkoshi Hub	400/220/132	630	630
7	Budhigandaki corridor 400 kV Transmission Line	Philim / Gumda	400/220/132	630	630
8	Dailekh - Kalikot - Jumla 132 kV Transmission Line	Kalikot	132/33	63	108
			132/11	45	
		Jumla	132/33	63	108
			132/11	45	
9	Damauli - Kushma - Burtibang - Banfikot 400 kV Transmission Line	Kushma	400/220/132	630	630
		Burtibang	400/220/132	630	630
		Banfikot	400/220/132	630	630
10	Lamosangu - Kavre / Ramechhap 132 kV Transmission Line	Kavre/Ramechhap	132/33	63	108
			132/11	45	
11	Nepalgunj-Nanpara 132 kV Transmission Line	Old Nepalgunj (33/11 kV)	132/33	3 Ø, 2x30	60
12	Okharpauwa-Tinpiple 220 kV Transmission Line	Tinpiple	220/132	1 Ø, 7x66.67 Bank	400
			132/66	3 Ø, 2x63	126
			132/11	3 Ø, 2x30	60
Total					**6910**

Details of underconstruction/planed & proposed Substation

S.N	Description	Transmission Directorate	Project Management Directorate	Total
1	Under construction (MVA)	2445.50	3893.00	6338.50
2	Planed and Proposed (MVA)	9267.50	6910.00	16177.50

Table 7: Major- Ongoing upgradation and reinforcement works of grid substations

S.N	Substation	Voltage Ratio, kV	Existing Capacity, MVA	Additional Capacity, MVA	New Capacity, MVA	Remarks
1	Pathalaiya (Piluwa)	132/33	30	100	130	1x100 MVA to be installed in a new bay
2	Mainahiya	132/33	90	100	190	New 1x100MVA transformer with associated bay
3	Parwanipur	132/66	189	126	315	New 2x63MVA transformers with associated bays
		132/33	63	63	126	New 1x63MVA transformers with associated bays
		132/11	67.5	67.5	135	3x22.5 MVA to be replaced by 3*45 MVA
4	Dhalkebar	132/33	93	133	226	New 1*100 MVA transformer with associated bay and 1*30 MVA to be replaced by new 1*63 MVA
5	Nawalpur	33/11	16.6	16.6	33.2	1x16.6MVA transformer with associated bay (Shift from Lahan)
6	Butwal	33/11	33.2	14.8	48	2x16.6 MVA to be replaced by new 2x24 MVA
7	Hetauda	132/66	65	70	135	New 1x45MVA transformer with associated bay and new 1x45MVA transformer will replace 132/66kV, 20MVA
8	Pokhara	132/11	60	75	135	2x30 MVA to be replaced by new 2x45 MVA and 1*45 MVA to be added
9	New Bharatpur	132/11	67.5	90	157.5	2*45 MVA transformer to be installed in new bay
10	Birgunj	66/11	60	30	90	1x30 MVA to be installed in a new bay.
11	Simara	66/11	30	30	60	New 1x30 MVA to be installed
12	Gandak	132/33	60	33	93	1x30 MVA to be replaced by a new 2x63 MVA.
13	Kohalpur	132/33	126	74	200	2x63 MVA transformer to be replaced by new 2x100 MVA transformer
		33/11	33.2	14.8	48	2x16.6 MVA transformer to be replaced by new 2x24 MVA transformer
14	Lahan	132/33	93	33	126	30MVA to be replaced by 63MVA
		33/11	33.2	14.8	48	2x16.6MVA to be replaced by new 2x24MVA
15	Bharatpur	132/11	67.5	15	82.5	2x22.5 MVA to be replaced by 2x30 MVA (shift from Pokhara).
16	Lekhnath	132/33	30	30	60	1x30 MVA to be installed (Shift from Chapur)
		132/11	22.5	22.5	45	1x22.5 MVA to be installed at spare bay (shift from Bharatpur)
17	Lamki	132/33	30	63	93	2x15 MVA to be replaced by 1x30 MVA (shift from Attaria) and 1*63 MVA shift from Kohalpur
		33/11	16.6	16.6	33.2	16.6MVA transformer to be added
18	Chanauta	132/33	60	33	93	30MVA to be replaced by 63MVA (shift from Kohalpur)
19	Kawasoti	132/33	30	33	63	1x30 MVA to be replaced by 1x63 MVA new transformer
		33/11	16.6	16.6	33.2	1x16.6 MVA to be installed in new bay (shift from Butwal)

S.N	Substation	Voltage Ratio, kV	Existing Capacity, MVA	Additional Capacity, MVA	New Capacity, MVA	Remarks
20	Kamane	132/11	0	45	45	2x22.5 MVA to be installed in new bay (shift from Bhaktapur)
21	Chapur	33/11	16.6	16.6	33.2	1x16.6 MVA to be installed in new bay (shift from Lahan)
22	Mahendranagar	132/33	60	66	126	2x30 MVA transformer to be replaced by new 2x63 MVA transformer
		33/11	16.6	16.6	33.2	1x16.6 MVA to be installed in new bay
23	Pahalmapur	33/11	8	16.6	24.6	1x16.6 MVA to be installed in a new bay
24	Syangja	33/11	16.6	16.6	33.2	New1*16.6 MVA to be installed
25	Motipur	132/33	30	30	60	1x30 MVA to be installed in a new bay (Shift from Chapur)
		33/11	16.6	16.6	33.2	1x16.6 MVA transformer with associated bay (Shift from Anarmani)
26	Sandhikharka	132/33	30	30	60	1x30 MVA to be installed in a new bay (Shift from Chanauta)
27	Hapure	132/33	30	30	60	1x30 MVA to be installed in a new bay (Shift from Kawasowti)
		33/11	16.6	16.6	33.2	1x16.6 MVA to be installed in a new bay (Shift from Duhabi)
28	Syaule	132/33	30	30	60	1x30 MVA to be installed in a new bay (Shift from Piluwa)
		33/11	16.6	16.6	33.2	1x16.6 MVA to be installed in a new bay (Shift from Kohalpur)
29	Lamahi	33/11	16.6	16.6	33.2	1x8 MVA to be replaced by 1*16.6 MVA (Shift from Kohalpur)
30	Ghorai	33/11	16.6	16.6	33.2	1x16.6 MVA to be installed in a new bay (Shift from Duhabi)
31	Damauli	33/11	16.6	16.6	33.2	1x16.6 MVA to be installed in a new bay. (Shift frm Butwal)
32	Mirchaiya	132/33	60	66	126	2x30 MVA transformer to be replaced by new 2x63 MVA transformer
33	Bhurigau	33/11	8	16.6	24.6	16.6MVA transformer to be added
34	Bhaktapur	132/11	135	45	180	1*45 MVA transformer to be added
35	Lapsifedi	132/11		22.5	22.5	1*22.5 MVA transformer to be added
36	Duhabi	132/33	252	100	352	1*100 MVA transformer to be added
				0		
37	New Butwal	132/33	0	63	63	1*63 MVA transformer to be added

Total Transformer Capacity Increment under progress : 2025.3 MVA

Table 8: Major- Ongoing upgradation and reinforcement works of grid substations

Capacitor Banks		
S.N	**Substation**	**Remarks**
1	Butwal	Installation of 132 kV, 1x30MVAr Capacitor Bank
2	Sunwal	Installation of 33 kV, 1x20 MVAr Capacitor bank
3	Rupani	Installation of 33 kV, 1x12.5 MVAr Capacitor bank
4	Chanauta	Installation of 33 kV, 1x12.5 MVAr Capacitor bank
5	Kawasoti	Installation of 33 kV, 1x20 MVAr Capacitor bank
6	Anarmani	Installation of 132 kV, 1x30MVAr Capacitor Bank
7	Duhabi	Installation of 33kV, 1x12.5MVAr Capacitor Bank
8	Damak	Installation of 33kV, 1x12.5MVAr Capacitor Bank
9	Parwanipur	Installation of 66 kV, 2x30MVAr Capacitor Bank
10	Parwanipur	Installation of 132 kV, 1x30MVAr Capacitor Bank
11	Hardi	Installation of 11 kV, 1x10MVAr Capacitor Bank
12	Kamane	Installation of 11 kV, 1x10MVAr Capacitor Bank
13	Kohalpur	Installation of 33kV, 1x20 MVAr Capacitor Bank
14	Mahendranagar	Installation of 33kV, 1x12.5MVAr Capacitor Bank
15	Loharpatti	Installation of 33kV, 1x20 MVAr Capacitor Bank
16	Mirchaiya	Installation of 33kV, 1x12.5MVAr Capacitor Bank
17	Lahan	Installation of 33kV, 1x20 MVAr Capacitor Bank
18	Nawalpur	Installation of 33kV, 1x12.5MVAr Capacitor Bank
19	Pathalaiya (Piluwa)	Installation of132 kV, 1*30 MVAr Capacitor Bank

Total Capacitor Bank Capacity Increment under progress : 387.5 MVAr

Table 9: Details of Approved Position and Working Employees under Transmission Directorate

S.N.	Position	Level	Service	Group	Approved Position	Working Employee
1	Deputy Managing Director	12	Technical	–	1	0
2	Director	11	Technical	–	4	5
3	Joint Director	10	Administration	Administration	1	1
4	Joint Director	10	Administration	Finance	1	1
5	Manager	10	Technical	Electrical	11	10
5	Manager	10	Technical	Civil	1	1
6	Deputy Director	9	Administration	Administration	0	0
7	Deputy Director	9	Administration	Finance	0	0
8	Deputy Manager	9	Technical	Electrical	8	17
9	Deputy Manager	9	Technical	Electronics	2	1
10	Deputy Manager	9	Technical	Civil	12	4
11	Assistant Director	8	Administration	Administration	2	1
12	Assistant Director	8	Administration	Finance	1	4
13	Assistant Manager	8	Technical	Electrical	22	18
14	Assistant Manager	8	Technical	Electronics	4	3
15	Assistant Manager	8	Technical	Mechanical	1	0
16	Assistant Manager	8	Technical	Civil	13	9
17	Assistant Manager	8	Technical	Computer Engineering	0	0
18	Administration Officer	7	Administration	Administration	10	6
19	Finance Officer	7	Administration	Finance	9	8
20	Engineer	7	Technical	Electrical	90	73
21	Engineer	7	Technical	Electronics	8	3

S.N.	Position	Level	Service	Group	Approved Position	Working Employee
22	Engineer	7	Technical	Civil	28	35
23	Survey Officer	7	Technical	Survey	3	2
24	Computer Officer	7	Administration	Computer	1	0
25	Assistant Administration Officer	6	Administration	Administration	5	18
26	Assistant Finance Officer	6	Administration	Finance	3	17
27	Assistant Computer Officer	6	Administration	Computer	1	2
28	Assistant Engineer	6	Technical	Electrical	156	39
29	Assistant Engineer	6	Technical	Mechanical	0	0
30	Assistant Engineer	6	Technical	Civil	17	15
31	Sinior Assistant	5	Administration	Administration	15	21
32	Accountant/Store Keeper	5	Administration	Finance	20	25
33	Computer Operator	5	Administration	Computer Operation	1	0
34	Supervisor	5	Technical	Electrical	380	185
35	Supervisor	5	Technical	Electronics	0	0
36	Supervisor	5	Technical	Mechanical	0	2
37	Supervisor	5	Technical	Civil	9	8
38	Senior Communication Equipment Operator	5	Technical	Electronic	1	1
39	Senior Heavy Equipment Operator	5	Technical	Vehical Driver	12	8
40	Office Assistant/Si.Mi.Ri.	4	Administration	Administration	0	6
41	Assistant Accountant/ Assistant Store Keeper	4	Administration	Finance	9	14
42	Guard Commander	4	Administration	Security	0	1
43	Foreman	4	Technical	Electrical	115	130
44	Foreman	4	Technical	Mechanical	0	1
45	Foreman Driver	4	Technical	Vehical Driver	1	7

S.N.	Position	Level	Service	Group	Approved Position	Working Employee
46	Clerk (Mi.Ri.)	3	Administration	Administration	0	0
47	Clerk	3	Administration	Finance	0	0
48	Electrician	3	Technical	Electrical	219	171
49	Driver	3	Technical	Vehical Driver	14	11
44	Junior Mistri	3	Technical	Mechanical	0	1
50	Office Helper - 2	2	Administration	Administration	16	9
51	Helper	2	Technical	Electrical	14	50
52	Office Helper - 1	1	Administration	Administration	8	3
53	Junior Helper	1	Technical	Electrical	0	1

ANNEXURE C: LIST OF RECENTLY COMPLETED SUBSTATION SINGLE LINE DIAGRAM (SLD)

For all the SLD of existing substations (66, 132, 220 & 400 kV), please visit Transmission Annual Publication uploaded in NEA Website: nea.org.np.

S.N.	Name of Substation
1	Amarpur (Kabeli)
2	Phidim
3	Godak
4	Damak
5	Anarmani
6	Duhabi
7	Kushaha
8	Inaruwa
9	Baneshwar
10	Tumlingtar
11	Basantapur
12	Dhungesanghu
13	Tingla
14	Lahan
15	Mirchaiya
16	Rupani
17	Dhalkebar
18	Chandranigahapur
19	Nawalpur
20	Garjyang
21	New Khimti
22	Singati
23	Lamosanghu
24	Indrawati
25	Pathlaiya
26	Parwanipur
27	Birgunj

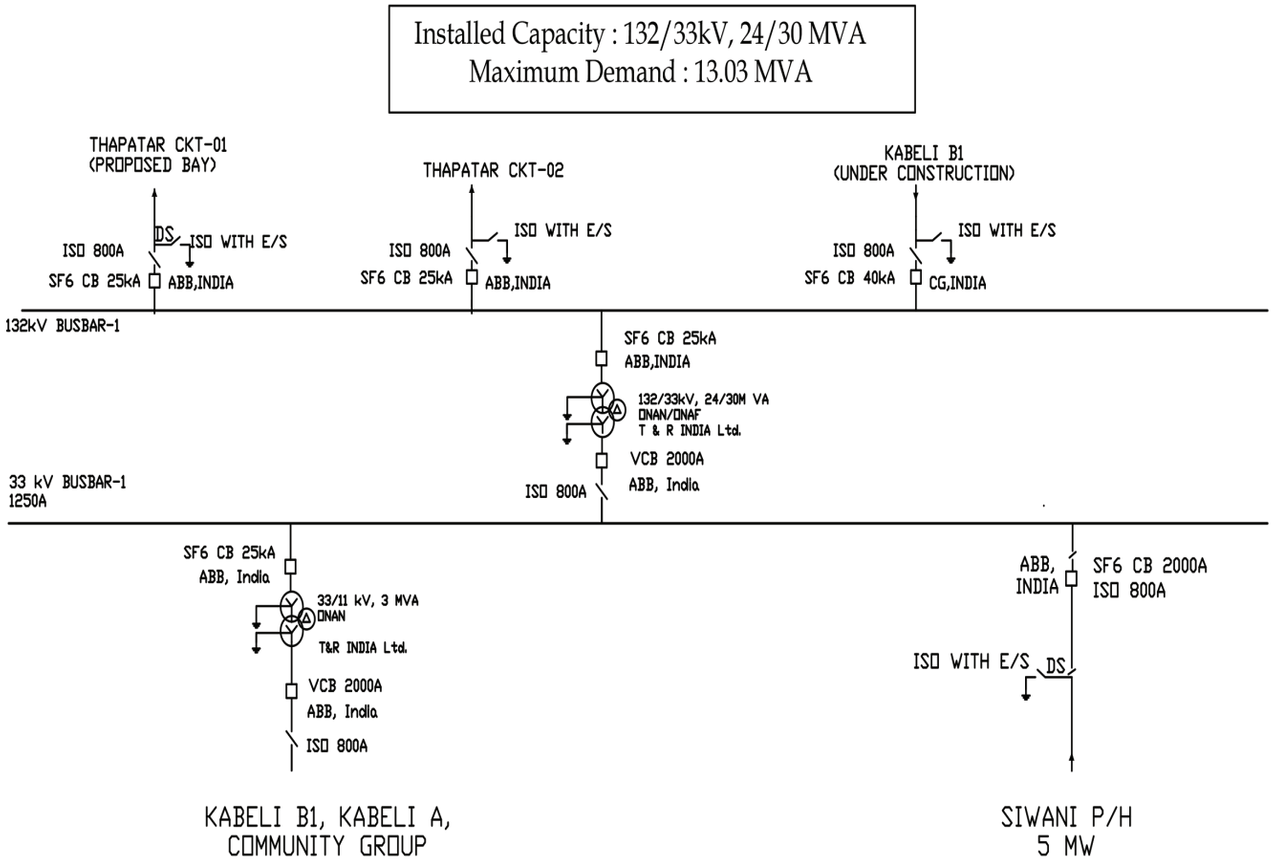
S.N.	Name of Substation
28	Purbi Chitwan
29	New Bharatpur
30	Bharatpur
31	Kamane
32	Hetauda
33	New Hetauda
34	Amlekhgunj
35	Simra
36	Balaju
37	Chapali
38	Siuchatar
39	New Chabel
40	Lainchour
41	Patan
42	Teku
43	K3
44	Baneswor
45	Bhaktapur
46	Banepa
47	Panchkhal
48	Matatirtha
49	Samundratar
50	Trishuli 3 B Hub
51	Damauli
52	Pokhara
53	Lekhnath
54	Markichowk

S.N.	Name of Substation
55	Syangja
56	Dana
57	Kushma
58	New Modi Switching Station
59	Lahachowk
60	Kirtipur
61	Butwal
62	Bardghat
63	Gandak
64	Chanauta
65	New Butwal
66	Sunwal
67	Kawasoti
68	Motipur
69	Sandhikharka
70	Mainahiya
71	Tamghas
72	Lamahi

S.N.	Name of Substation
73	Ghorahi
74	Kusum
75	Hapure
76	Kohalpur
77	Bhurigaon
78	Attaria
79	Lamki
80	Mahendranagar
81	Pahalmanpur
82	Syaule
83	Chilime Hub
84	Loharpatti
85	Burtibang
86	Paudi Amarai
87	Malekhu
88	Mulpani
89	Udipur

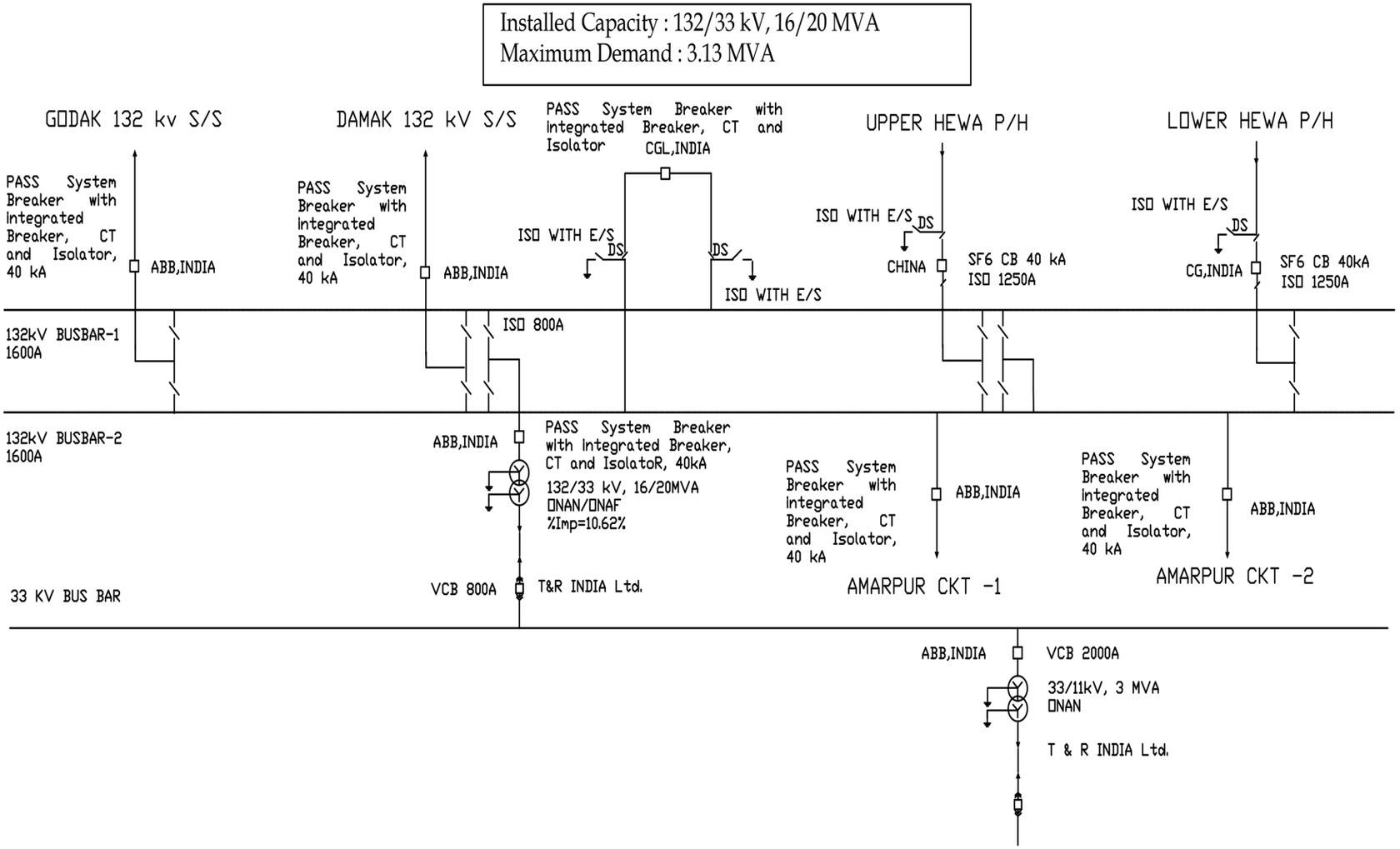
1. AMARPUR SUBSTATION

Amarpur substation with Double Bus bar system, located at Amarpur of Panchthar district of Mechi Zone and connected to Thapatar 132 kVSub Stations. This substation receives power from Siwani Hydro (5MW) via 33 kV single circuit line. This substation was commissioned in 2015 with 132/33 kV, 24/30 MVA capacity. It also consists of 33/11 kV, 3 MVA capacity transformer supplying to local feeder kabeli B1, kabeli A and a community group.



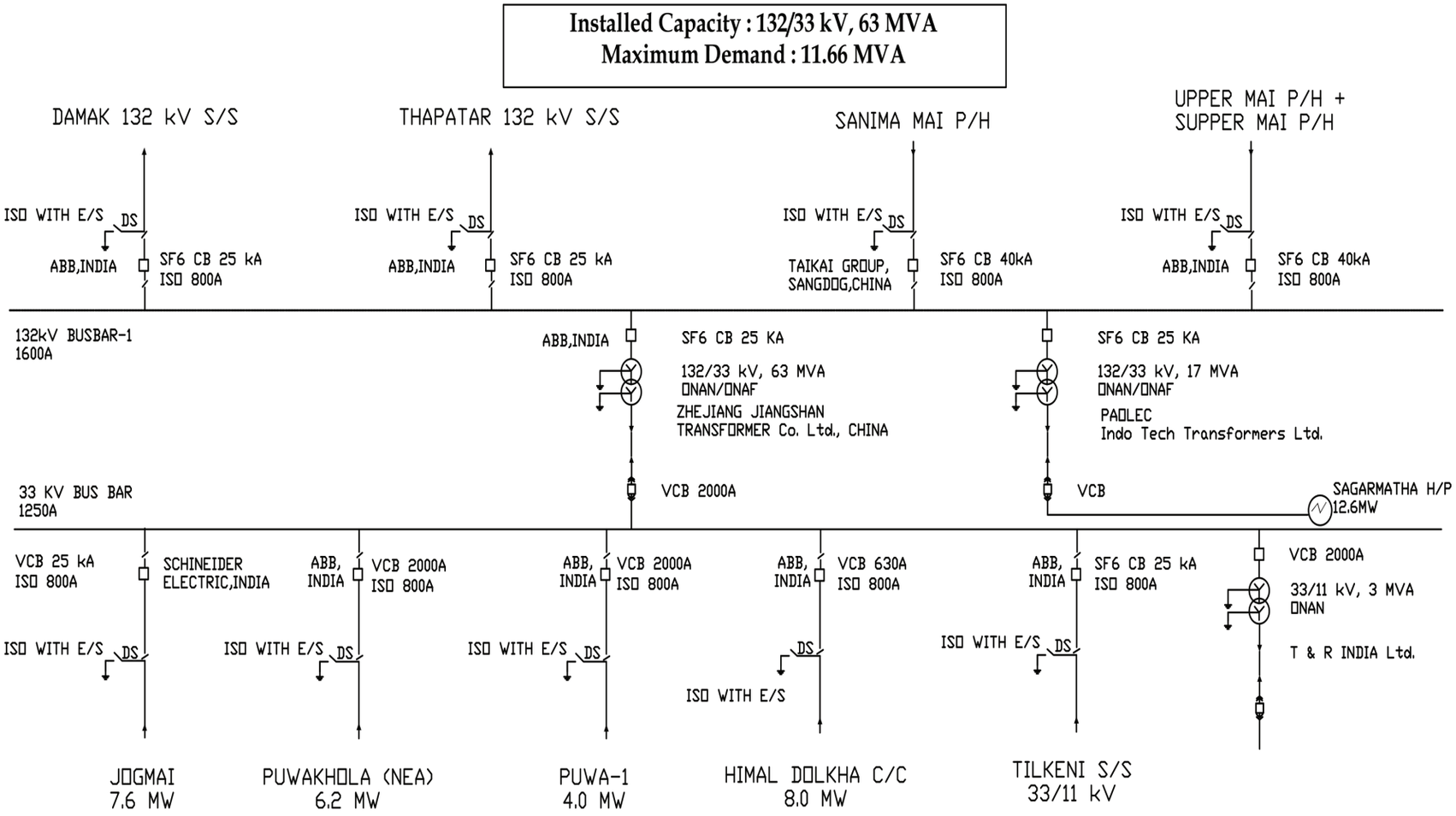
2. PHIDIM (THAPATAR) SUBSTATION

Thapatar substation with Double Bus bar system, located at Thapatar, Phidim of Panchthar district of Mechi Zone and connected to Godak and Damak Sub Stations. This substation is receives power from Upper Hewa (15MW) and Lower Hewa (22.5MW) by 132kV single circuit line. It is also connected to Amarpur substation by 132kV double circuit line. This substation was commissioned in 2015 with 132/33 kV, 20 MVA capacity. It also consists of 33/11 kV, 3 MVA capacity transformer supplying to local feeder Yasok.



3. GODAK (ILAM) SUBSTATION

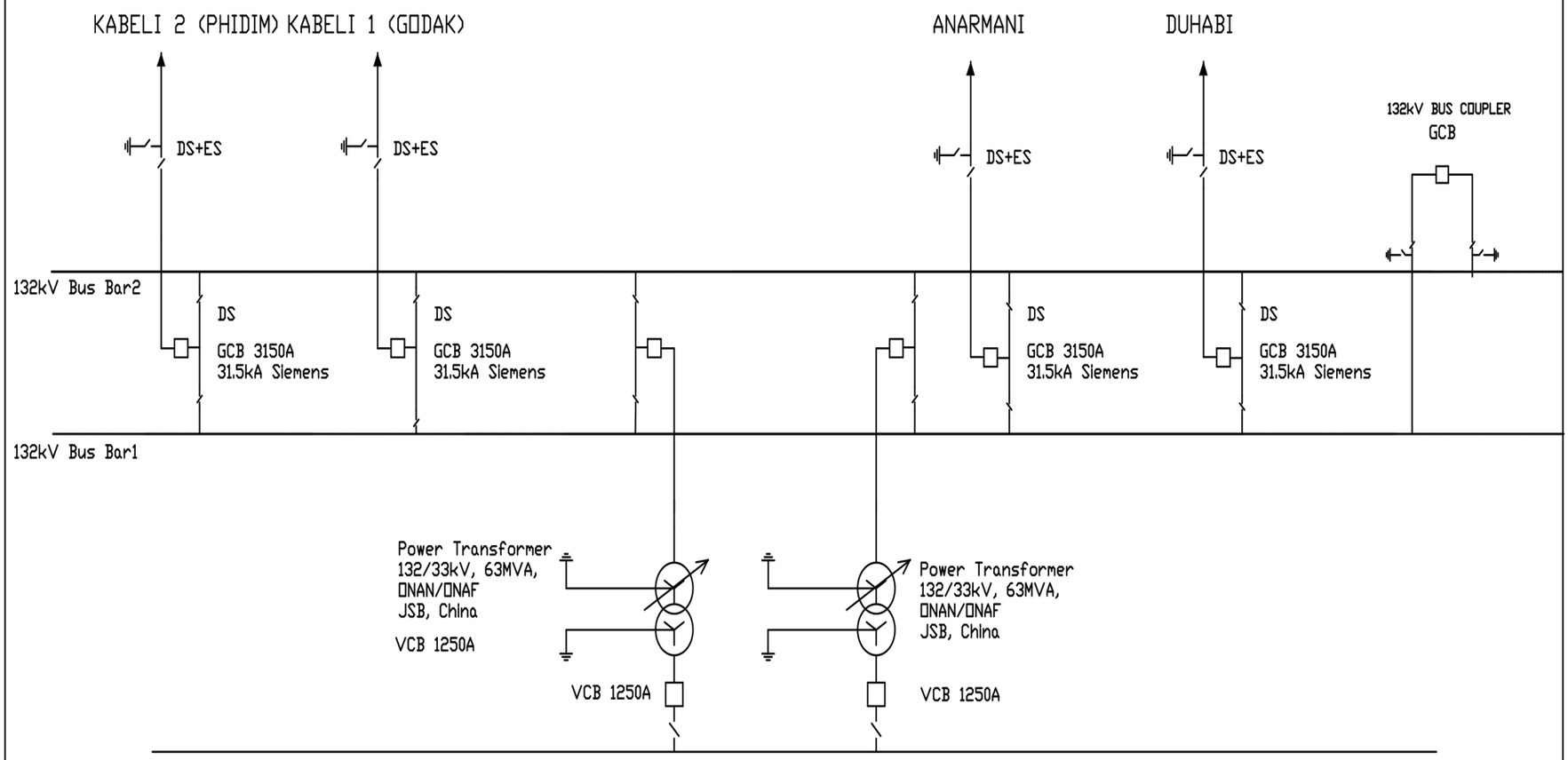
Godak substation with Single Bus bar system, located at Godak of Ilam district of Mechi Zone and connected to Damak and Thapatar 132 kV Sub Stations. This substation is receives power from Sanima Mai (30MW), Upper Mai (18.1MW), Supper Mai(7.8MW) by 132 kV single circuit line and Himal Dolkha C/C (8MW), Himal Dolkha (4.5MW), Puwakhola NEA (6.2MW), Puwa-1 (4MW) by 33 kV single circuit line and Jogmai (7.6MW) by 33 kV double circuit line and 33/11 kV, 8MVA Tlkeni Substation by 33 kV single circuit line. This substation was commissioned and charged in 2015 with 132/33 kV, 30 MVA capacity and later on 2018 the capacity is upgraded to 63MVA. It also consists of 33/11 kV, 3 MVA capacity transformer supplying to Soktim local feeder.



4. DAMAK SUBSTATION

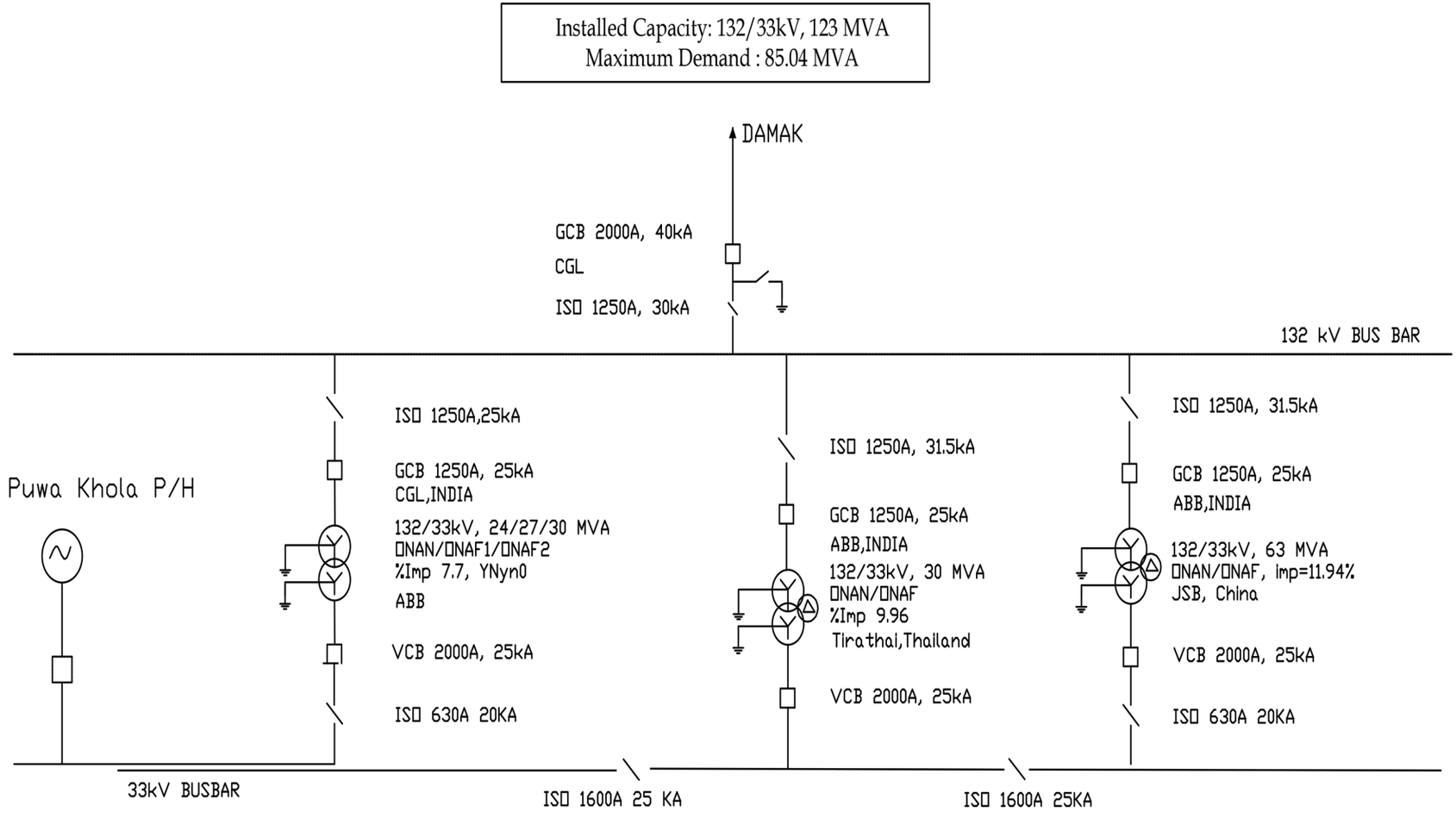
Damak substation located at Damak of Jhapa District, Mechi Zone, feeds power to Damak, Panchgachi, Kerkha and Padajungi area. This Substation is connected to Duhabi and Anarmani by 132 kV single circuit line and Kabeli Corridor through double circuit line. This Substation was commissioned in 2015 with 132/33kV, 30MVA capacity. New 132/33kV, 63MVA Transformer Bay was installed in 2020 and 30MVA was put out of service.In 2023 another 132/33kV, 63MVA power transformer was installed in 2023.

Installed Capacity : 132/33kV, 126MVA
Maximum Demand : 67.37MVA



5. ANARMANI SUBSTATION

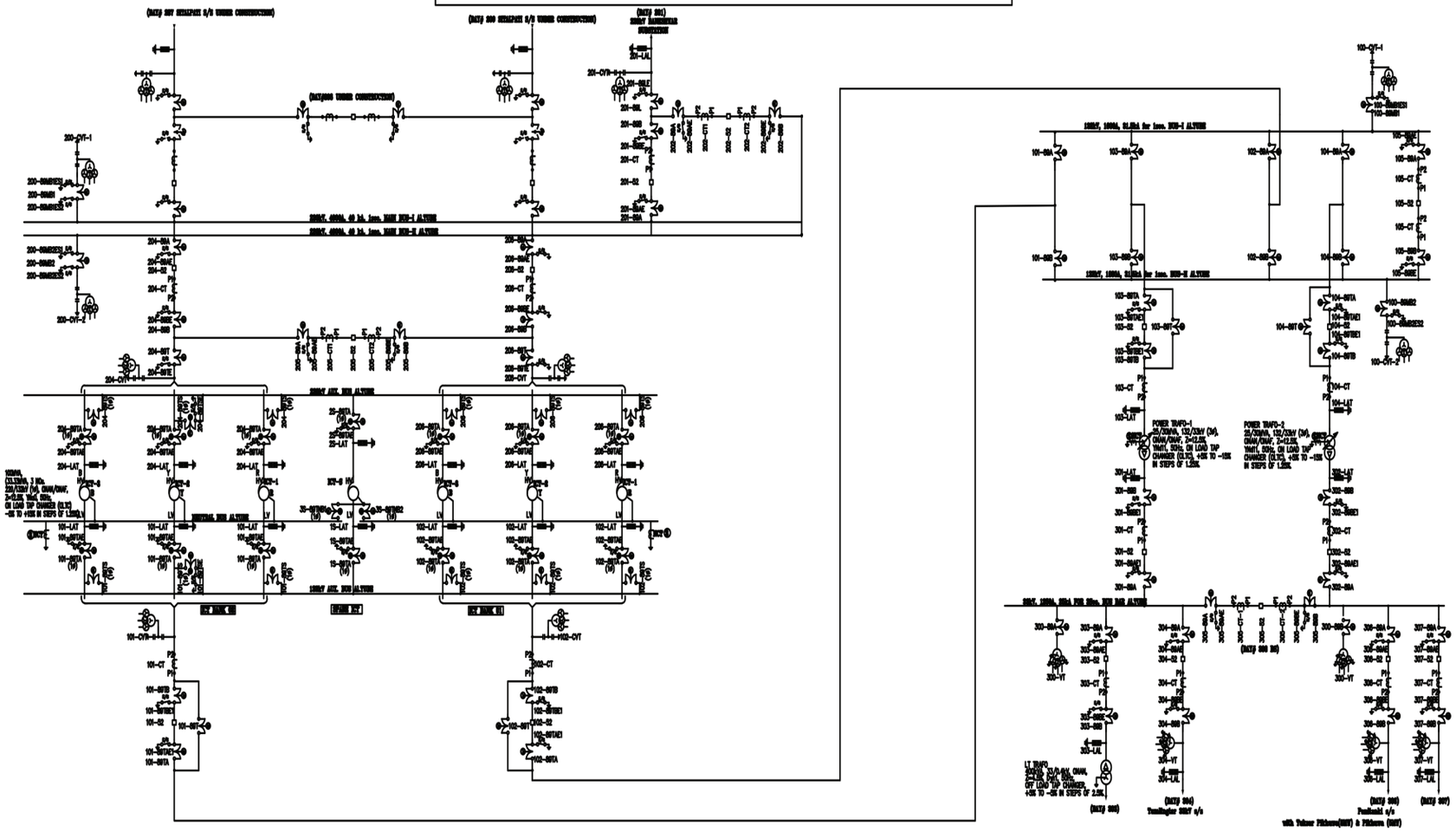
Anarmani substation with single bus system, located at Anarmani of Jhapa district Mechi Zone feeds power to Dhulabari, Damak, Ilam, Chandragadhi, Suranga and Garamani. This substation is connected to Duhabi Substation by 132kV single circuit line. Puwakhola Power Station, 5.3 MW, is connected to this substation by 33kV transmission Line. This substation was commissioned in 1992 with 132/33 kV two numbers of 7.5 MVA transformers and was upgraded to 2x15 MVA in 2003 and 2004. In 2007, one of 2x15MVA transformers was upgraded to 30MVA. Further existing 15 MVA Transformer was replaced by 30 MVA in 2009. Also 132/33kV, 63MVA new transformer with associated was installed in 2023.



10. TUMLINGTAR SUBSTATION

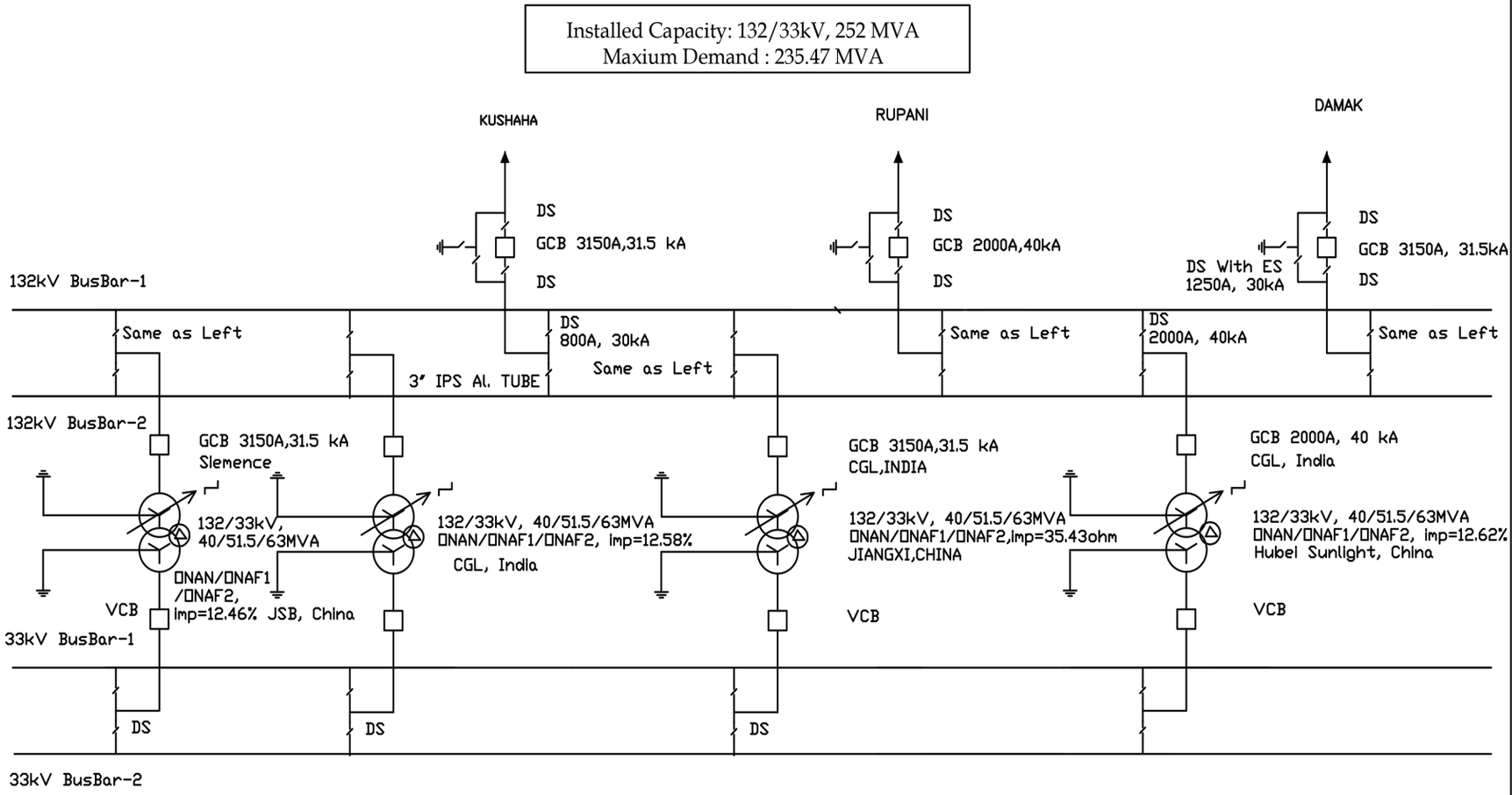
Tumlingtar substation with One and half breaker shceme in 220kV, Double Bus bar system in 132kV, located at Tumlingtar of Sankhuwasabha district of Koshi Province is connected to Baneshwor 220kV substation, Panitanki 33kV substation and Tumlingtar DCS 33kV substation. This substation receives power from Tuksar Pikhuwa(8MW) & Pikhuwa (5MW) via 33 kV Panitanki substation line. This substation was commissioned in 2022 AD with seven 220/132kV single phase transformer to form two banks each of 100MVA and two numbers of 132/33kV, 30MVA transformers.

Installed Capacity : 220/132, 200MVA & 132/33kV, 60 MVA
Maximum Demand : 21 MVA



6. DUHABI SUBSTATION

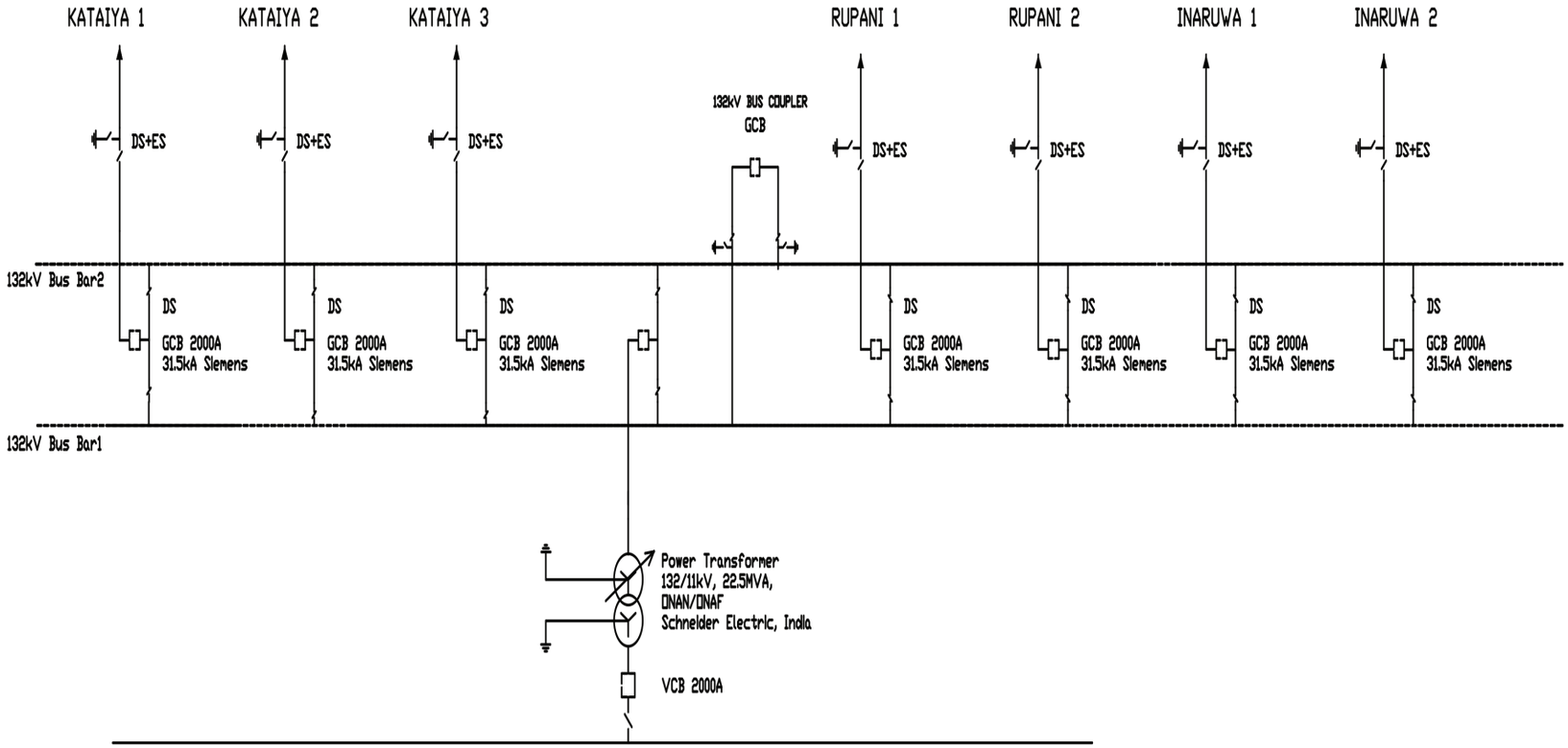
Duhabi substation with double bus sytem, located at Duhabi of Sunsari district of Koshi Zone feeds power to Biratnagar, Inaruwa, Dharan and Duhabi. This substation is connected to Lahan and Kushaha substations by 132kV double circuit and with Anarmani by Single Circuit Line. This substation was commissioned in 1985 with 132/33 kV, 30 MVA capacity. This substation was upgraded to 60 MVA, with additional installation of 30 MVA transformer in 1995. In 2004, one 30MVA transformer was replaced by 63MVA. Replacement of another 30 MVA transformer with 40/51.5/63 MVA transformer was completed in 2009. Capacitor banks with capacity of 2x6.07 MVAR were installed in 1996 and 3x10MVAR in 2003 for voltage improvement. Multifuel Power station, 39MW, is connected to this substation by 4 km double circuit transmission line. Kataiya Power Station in India is also connected by double circuit 33kV line. Further two new 132/33kV, 63MVA Transformer Bays was installed in 2017 and 2021 repectively.



7. KUSHAHA SUB STATION

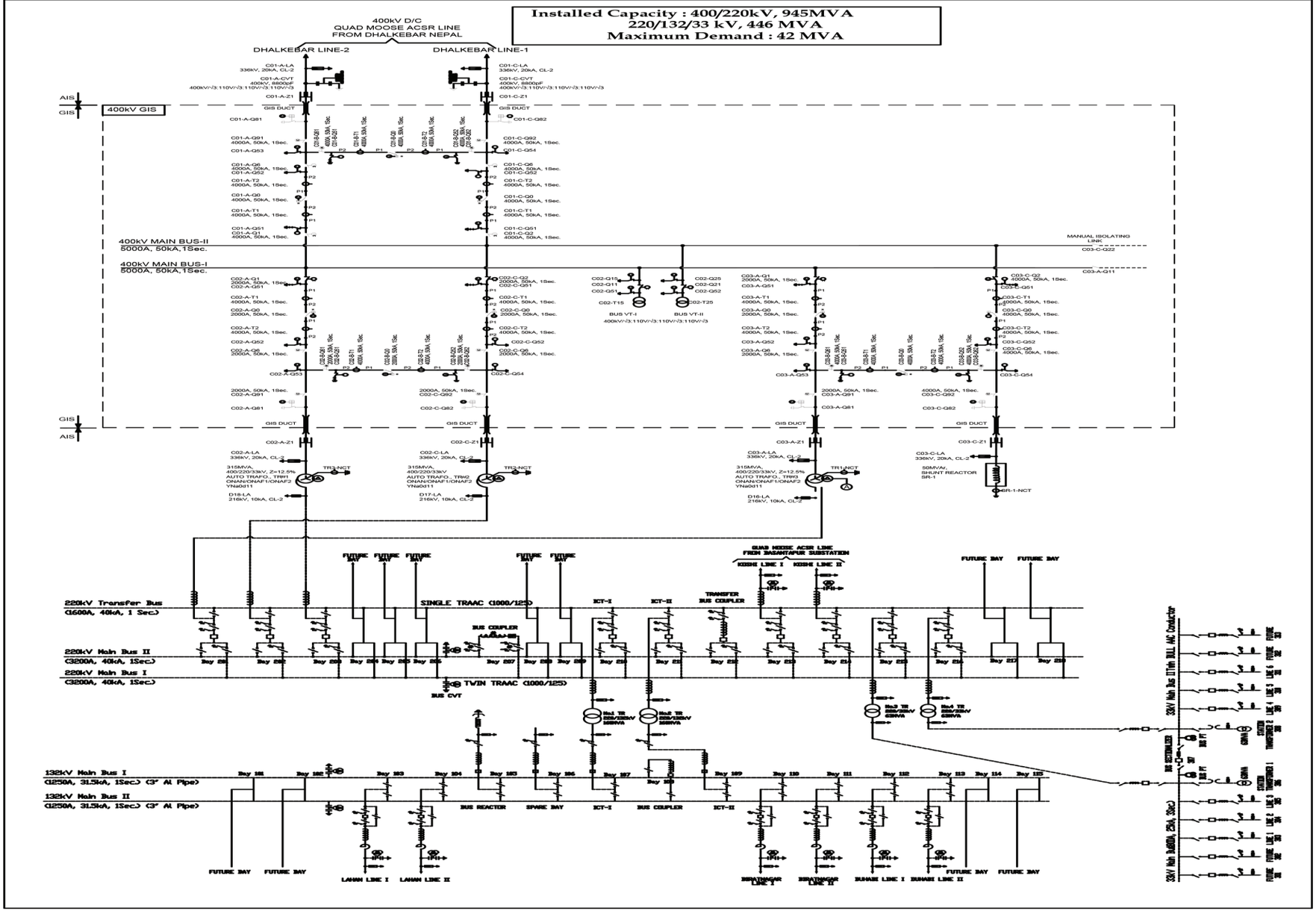
Kushaha substation with Double Bus System is located at Kushaha of Sunsari District, Koshi Zone offers the Loop In Loop Out (LILO) for Dhalkebar-Duhabi 132 kV double circuit line. Furthermore, this substation connects with the cross border line (Kushaha Kataiya 132 kV Transmission Line) for import/export of power from India. This substation consist of 1 no. of 132/11kV, 22.5 MVA power transformer. There are total 7 nos. of line bays i.e. 3 nos. of line bays from Kataiya substation India, 2 nos. of line bays from Rupani Substation and 2 nos. of line bays from Inaruwa Substation. Also, there are 5 nos. of 11 kV outgoing feeders. This Substation was commissioned in 2023.

Installed Capacity : 132/11kV, 22.5MVA



8. INARUWA SUBSTATION

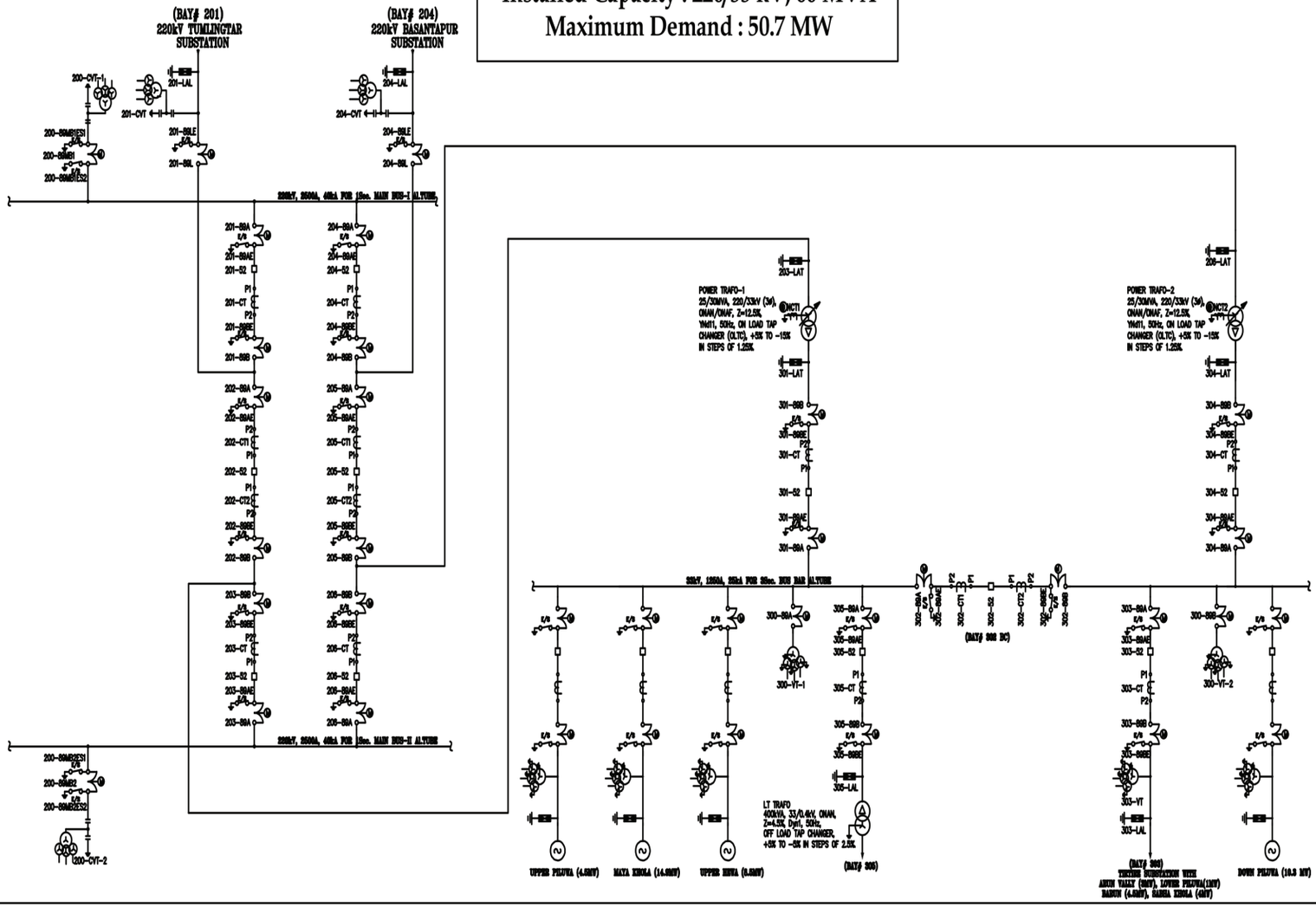
Inaruwa 400/220/132/33kV substation with One & half breaker system in 400kV, Double Main Busbar with Transfer bus system in 220kV voltage level and Double Busbar system in 132kV voltage level, located at Inaruwa of Sunsari district of Koshi Province is connected to Dhalkebar substation through D/C 400kV Line, Koshi Corridor through single circuit 220kV line and Rupani (via Kushaha) & Duhabi substation through 132kV double circuit line. This substation was commissioned in 2022 with 220/132/33 kV, 446 MVA capacity and later commissioned in 400kV in 2024 with three nos. of 315MVA, 400/220/33kV Autotransformers. It also supply power to 33/11kV Inaruwa substation through one 33kV line.



9. BANESHWOR SUBSTATION

Baneshwor substation with one & half breaker 220 kV bus bar system, located at Baneshwor of Sankhuwasabha district of Koshi Province is connected to Tumlingtar substation and Basantapur substations by 220kV line. This substation receives power from Maya khola (14.9MW), Down Piluwa (10.3MW), Upper Hewa (8.5MW), Upper Piluwa (4.5MW) and power from Tirtire substation. It was commissioned in 2022 AD with two nos. of 220/33kV, 30MVA transformers.

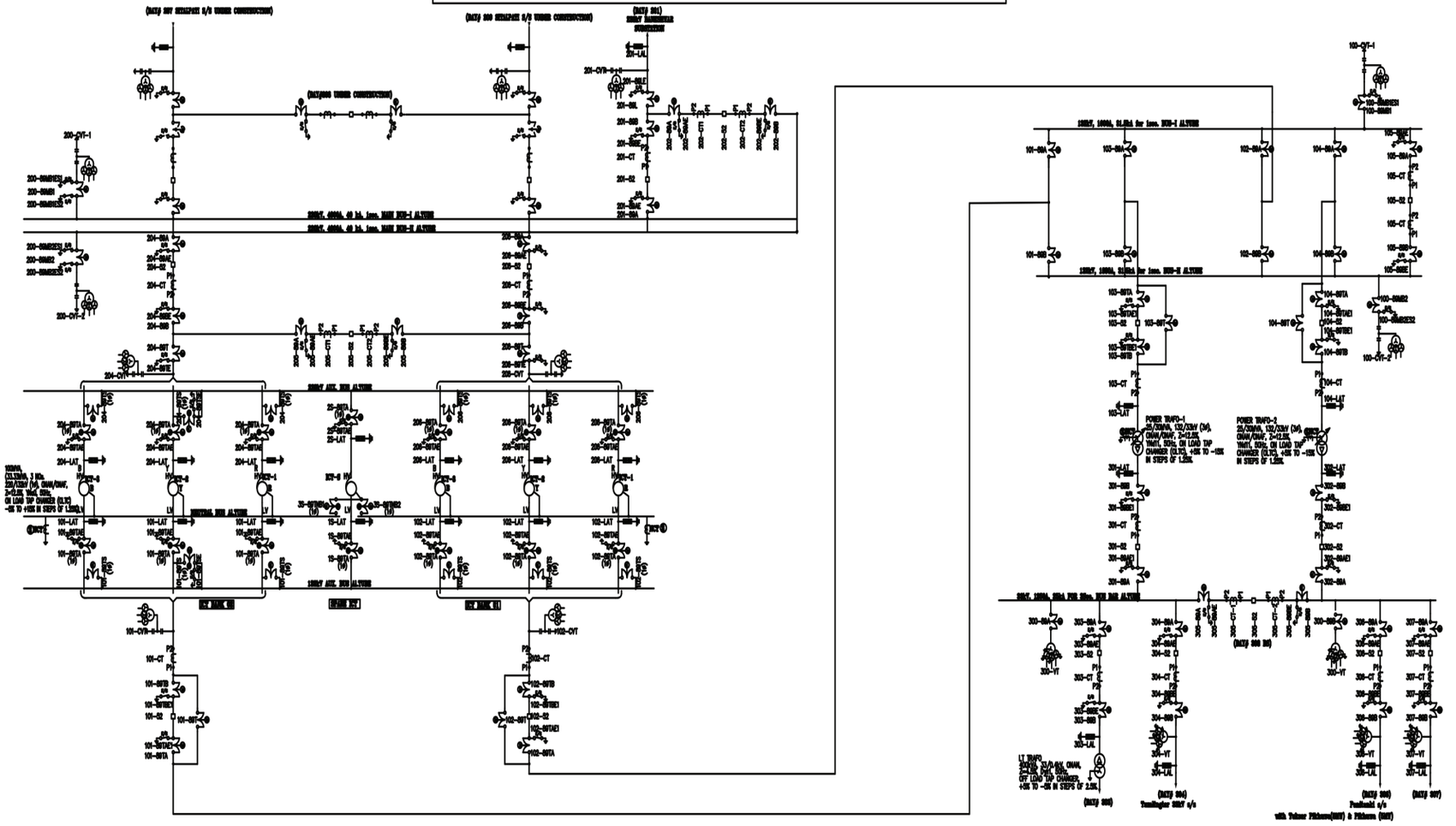
Installed Capacity : 220/33 kV, 60 MVA
Maximum Demand : 50.7 MW

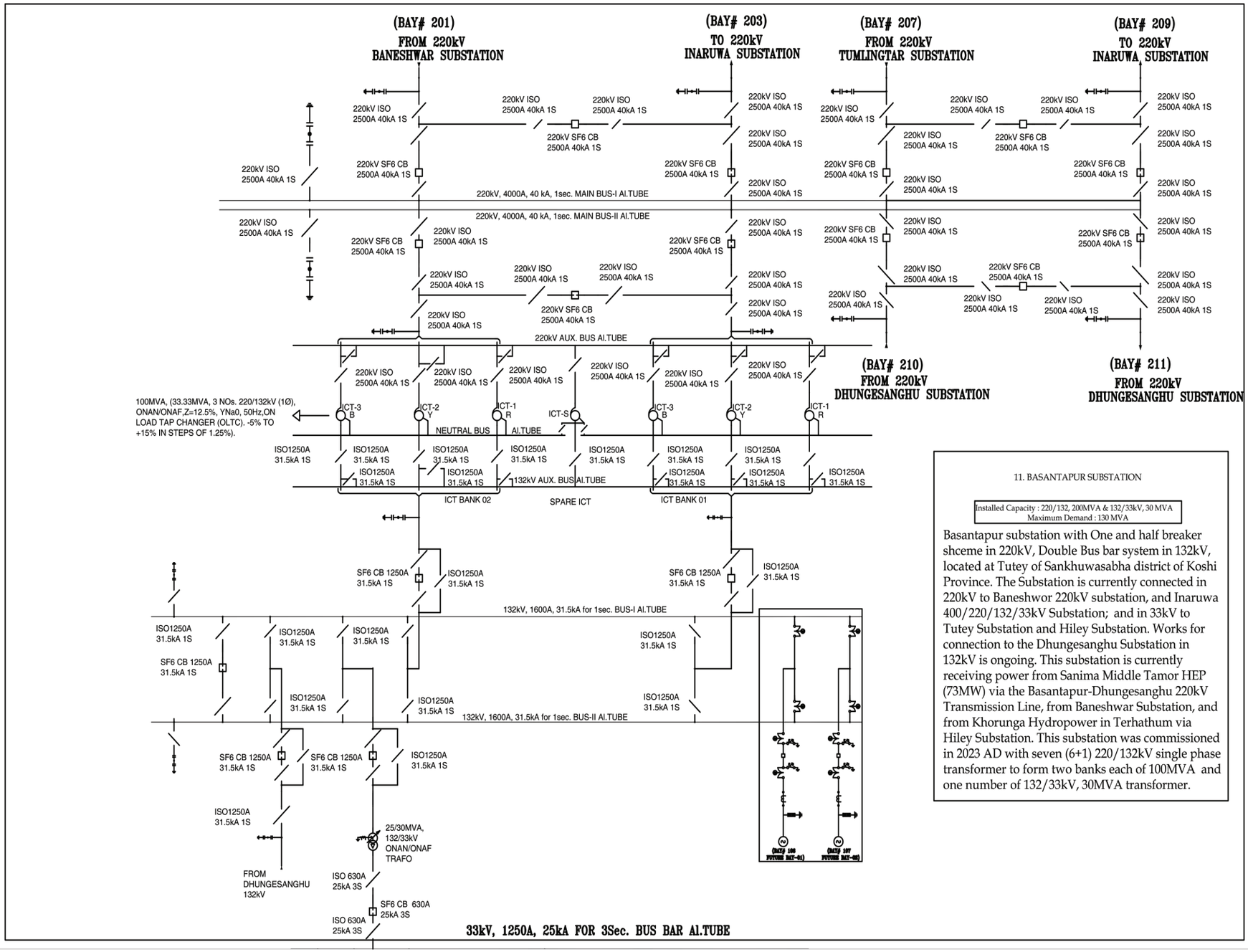


10. TUMLINGTAR SUBSTATION

Tumlingtar substation with One and half breaker shceme in 220kV, Double Bus bar system in 132kV, located at Tumlingtar of Sankhuwasabha district of Koshi Province is connected to Baneshwor 220kV substation, Panitanki 33kV substation and Tumlingtar DCS 33kV substation. This substation receives power from Tuksar Pikhuwa(8MW) & Pikhuwa (5MW) via 33 kV Panitanki substation line. This substation was commissioned in 2022 AD with seven 220/132kV single phase transformer to form two banks each of 100MVA and two numbers of 132/33kV, 30MVA transformers.

Installed Capacity : 220/132, 200MVA & 132/33kV, 60 MVA
Maximum Demand : 21 MVA





11. BASANTAPUR SUBSTATION

Installed Capacity : 220/132, 200MVA & 132/33kV, 30 MVA
Maximum Demand : 130 MVA

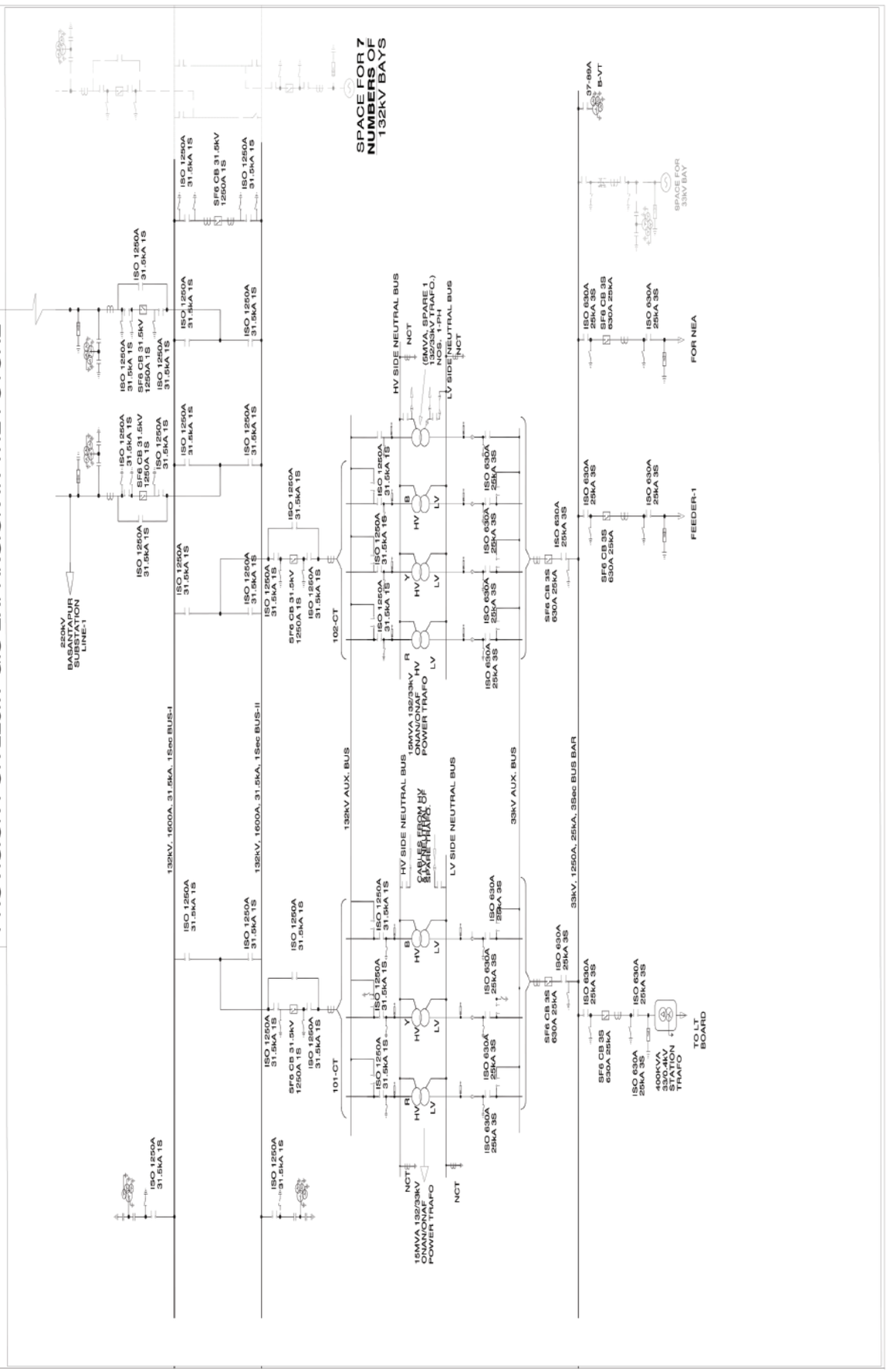
Basantapur substation with One and half breaker shceme in 220kV, Double Bus bar system in 132kV, located at Tutey of Sankhuwasabha district of Koshi Province. The Substation is currently connected in 220kV to Baneshwor 220kV substation, and Inaruwa 400/220/132/33kV Substation; and in 33kV to Tutey Substation and Hiley Substation. Works for connection to the Dhungesanghu Substation in 132kV is ongoing. This substation is currently receiving power from Sanima Middle Tamor HEP (73MW) via the Basantapur-Dhungesanghu 220kV Transmission Line, from Baneshwar Substation, and from Khorunga Hydropower in Terhathum via Hiley Substation. This substation was commissioned in 2023 AD with seven (6+1) 220/132kV single phase transformer to form two banks each of 100MVA and one number of 132/33kV, 30MVA transformer.

12. DHUNGESANGHU SUBSTATION

Dhungesanghu substation with Double Bus with Bypass Isolator system in 132kV is located at Dhungesanghu of Taplejung district of Koshi Province. The Substation although commissioned after testing had to be decommissioned because the only available circuit of the Basantapur-Dhungesanghu D/C 220kV TL is being utilized for the evacuation of the power from Sanima Middle Tamor HEP (73MW). The Substation being only of 132/33kV level, therefore can only be commissioned and brought into use once the second circuit of the Basantapur-Dhungesanghu TL is complete. Works pertaining to that end are ongoing. Two banks of 132/33kV transformers each of 5x3 = 15MVA (6+1 spare) making a total of 30MVA are installed in the Substation.

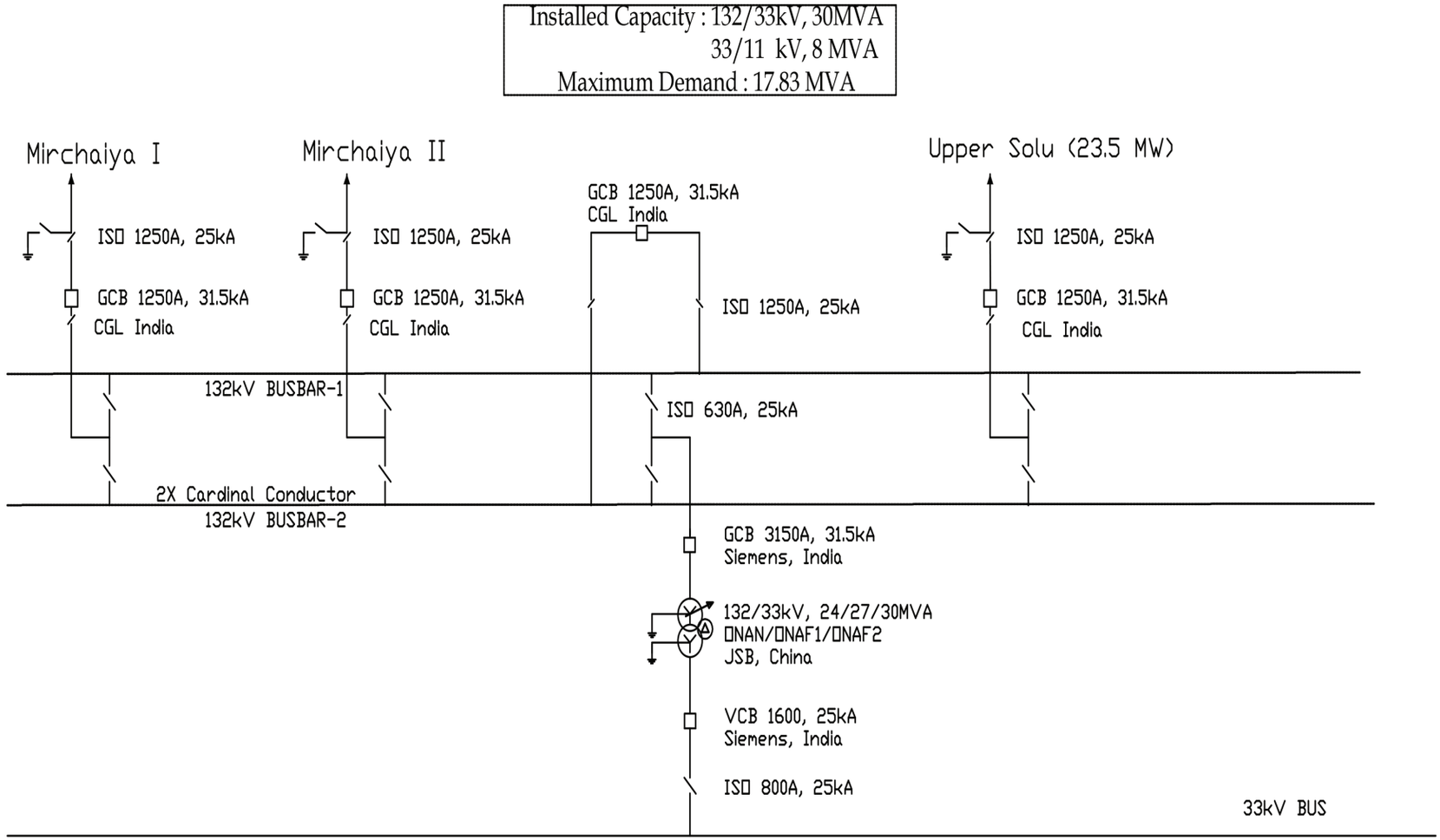
Installed Capacity : 132/33kV 30MVA
Maximum Demand : N/A

PROVISION FOR 220kV GIS EXPANSION IN THE FUTURE



13. TINGLA SUBSTATION

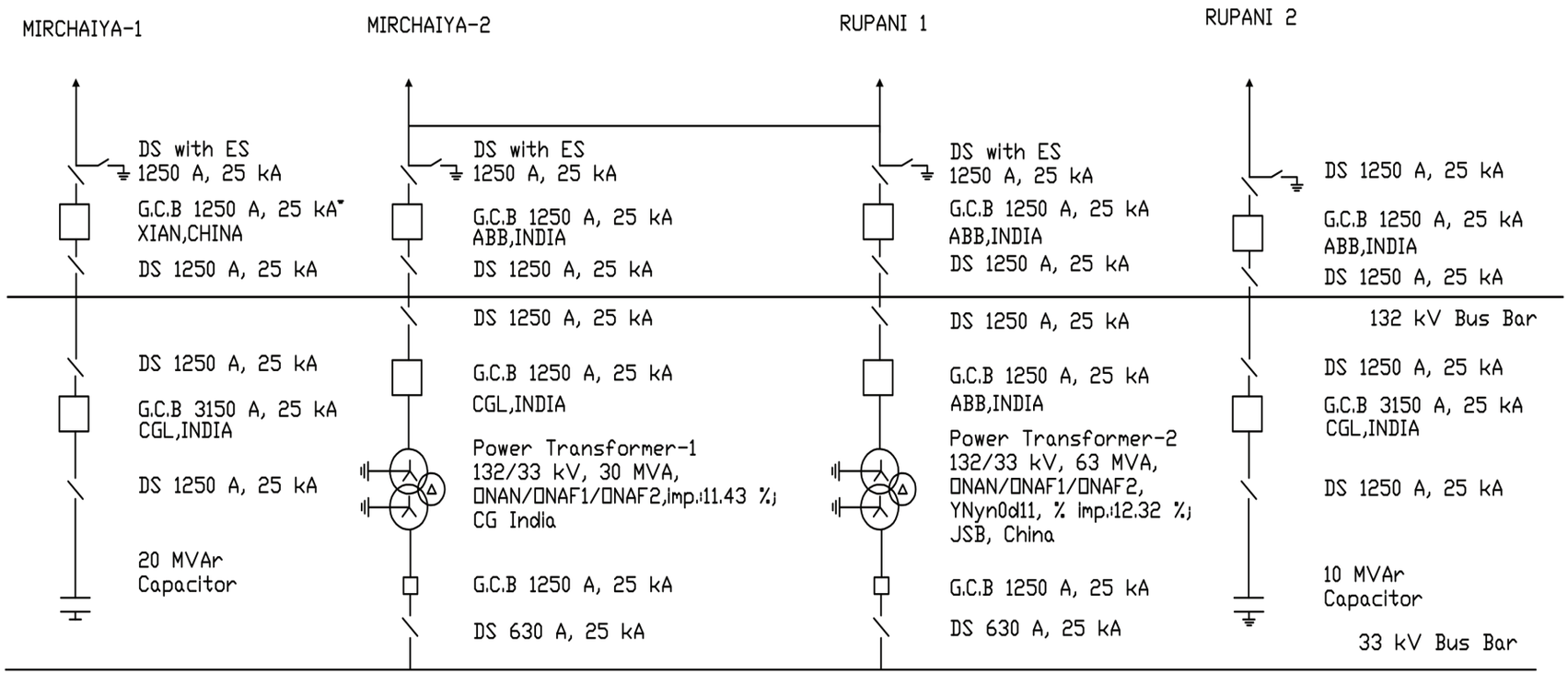
Tingla Substation with Double Bus System located at Tingla (Solu-Dudhkunda Nagarpalika) of Solukumbu District, Janakpur zone feeds power to Solukumbu and Okhaldunga Districts and to evacuate Hydropower generated Tingla Areas. Tingla Substationwill connected with Michaiya Sustation and23.5 MW Upper Solu Hydropower.



14. LAHAN SUBSTATION

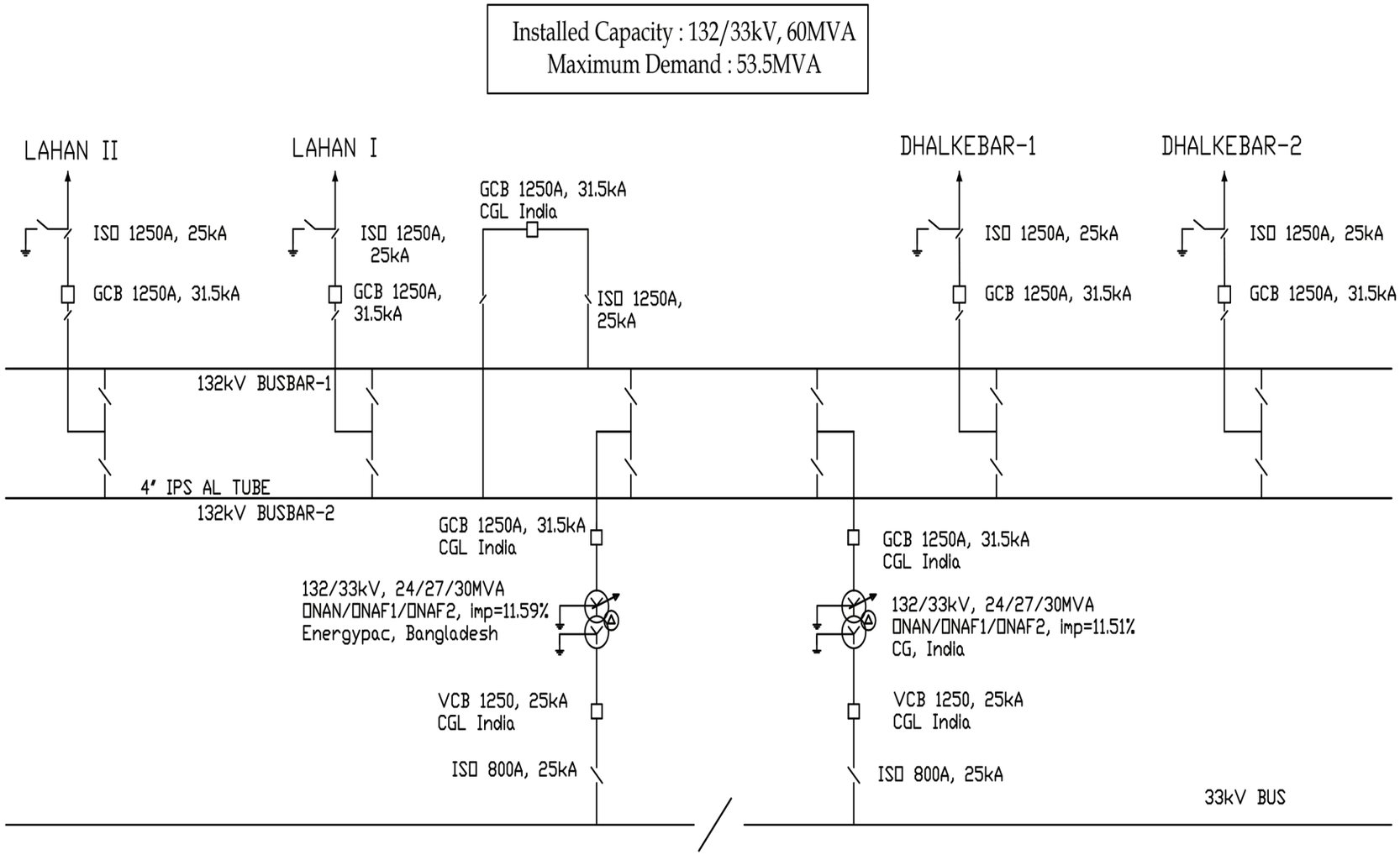
Lahan Substation with single busbar sytem, located at Lahan of Siraha district of Sagarmatha zone feeds power to Rajbiraj, Rupani, Jaljale and Bastipur. This substation is connected to Dhalkebar and Duhabi by 132kV double circuit line . This substation was commissioned in 1992 with 132/33 kV two numbers of 12.5 MVA transfomers. The Kusaha and Dhalkebar-II bays were constructed in 1999. The line 2 is connected to Duhabi substation through Kusaha switching station. In 2004, one 12.5MVA transformer got damaged and was replaced by 10 MVA. The 10MVA Transformer was further upgraded to 20MVA in 2006. The existing 12.5 MVA was replaced by new 63MVA Transformer in 2011.

Installed Capacity: 132/33kV, 93MVA
Maximum Demand: 38.87MVA



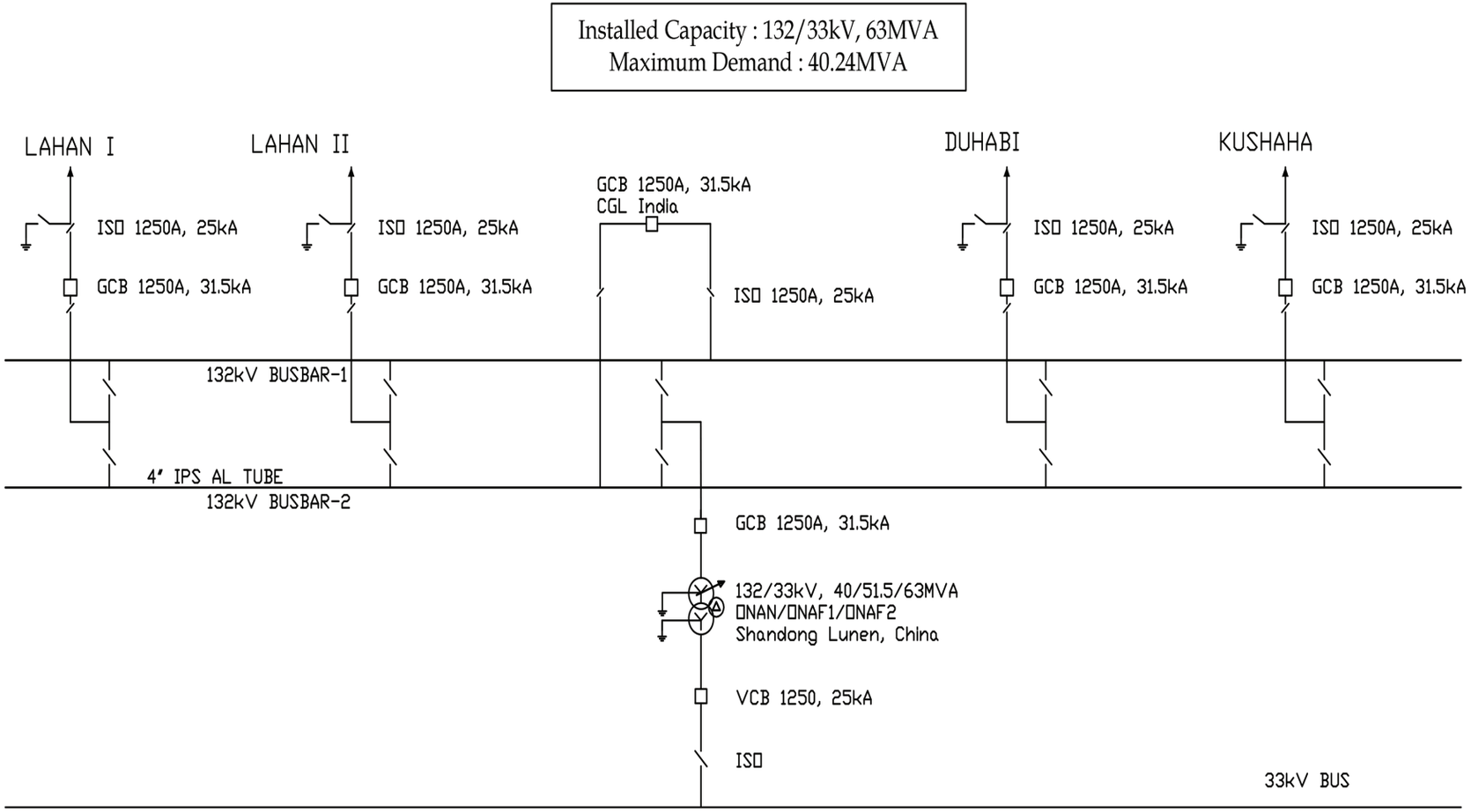
15. MIRCHAIYA SUBSTATION

Mirchaiya Substation with Double Bus System located at Mirchaiya of Siraha district, Sagarmatha zone feeds power to Katari and Mirchaiya. This Substation is connected with Dhalkebar Sustation and Lahan Substation through Double Circuit 132kV line. This Substation was commissioned in 2017 with 132/33kV, 30MVA capacity.



16. RUPANI SUBSTATION

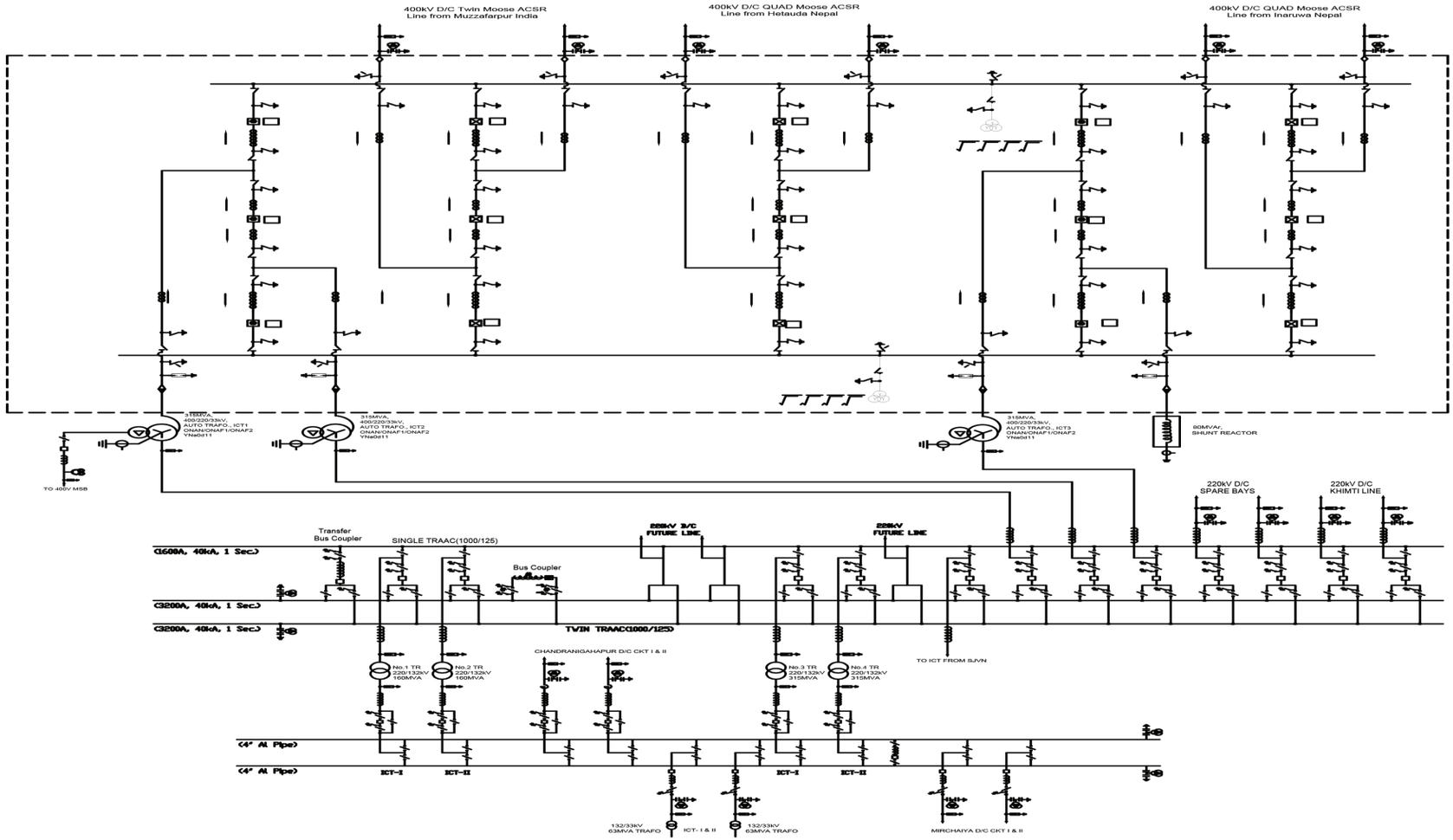
Rupani Substation with Double Bus System located at Rupani of Saptari district, Sagarmatha zone feeds power to Rajbiraj, Bodebarsain, Balardah and Rupani. This Substation is connected with Duhabi Sustation and Lahan Substation through Double Circuit 132kV line The line 2 is connected to Duhabi Substation through Kusaha switching station. This Substation was commissioned in 2019 with 132/33kV, 63MVA capacity.



17. DHALKEBAR SUBSTATION

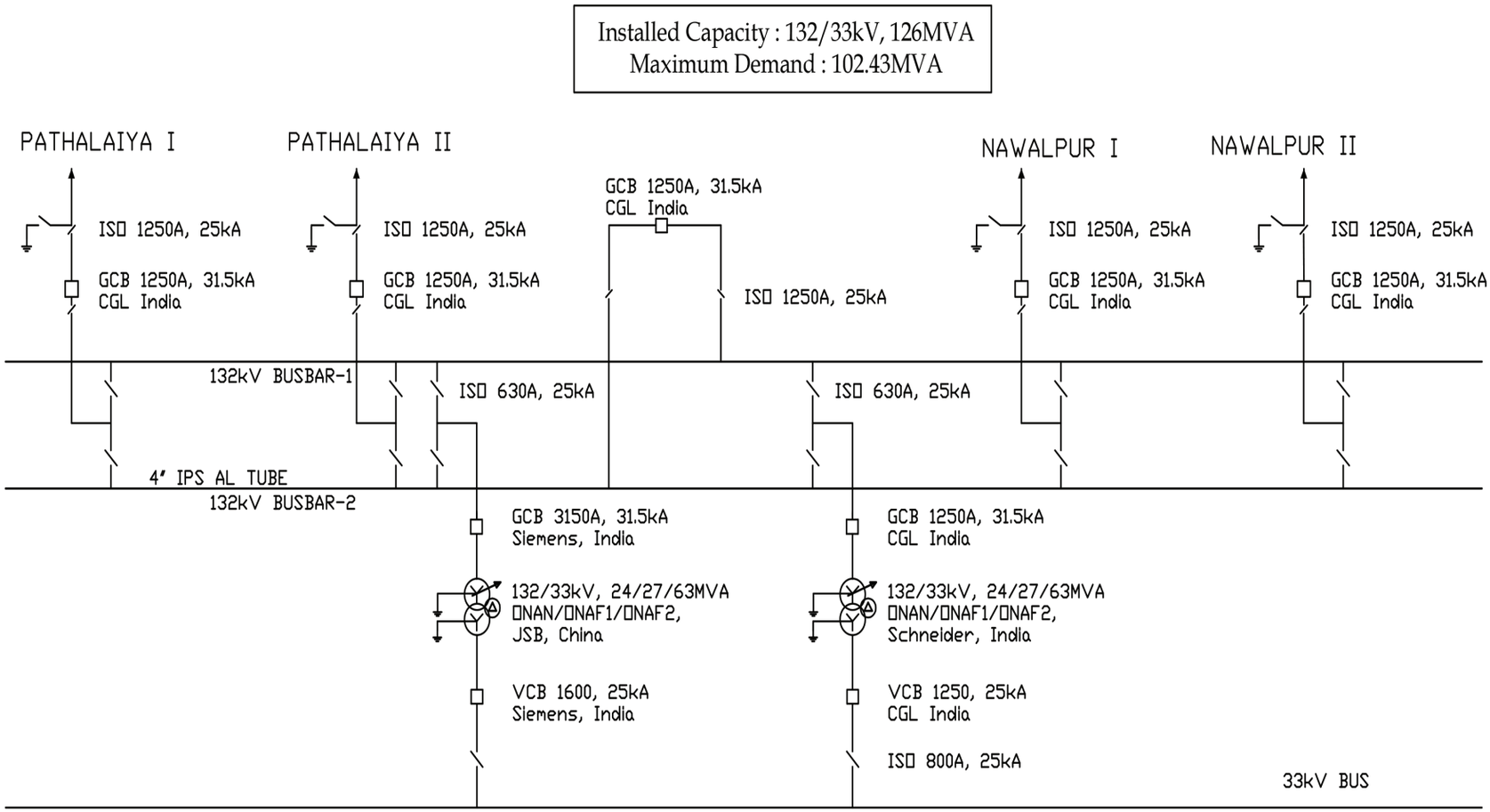
Dhalkebar 400/220/132/33kV Substation with One & half breaker bus bar scheme in 400kV, Double main bus with transfer bus scheme in 220kV and Double bus system located at Dhalkebar, Dhanusha, Madesh Pradesh. The substation was initially comissioned in 1984 with 132/33/11kV, 10MVA capacity. The substation is connected to Muzzaffarpur, India by 400kV D/C cross border line, Inaruwa substation by 400kV D/C line and is expected to connect to New Hetauda substation by 400kV D/C line. Also, the substation is connected to Khimti substation by 220kV D/C line, Chandranigahapur substation by 132kV D/C line and Mirchaiya substation by 132kV D/C line.The substation currently has three nos. of 315MVA, 400/220/33kV Autotransformers, one no. of 80 MVAR 400kV Reactor, two nos. of 315MVA, 220/132kV Autotransformers, two nos. of 160 MVA, 220/132kV Autotransformers and two nos. of 63MVA, 132/33kV transformers. This substation feeds power to Janakpur, Sindhuli, Malangwa, Mahendranagar, Godar and Lalghad.

Installed Capacity : 132/33 kV, 126 MVA
220/132 kV, 950 MVA
400/220kV, 945 MVA
Maximum Demand: 117.06 MVA (132/33kV)



18. CHANDRANIGAHPUR SUBSTATION

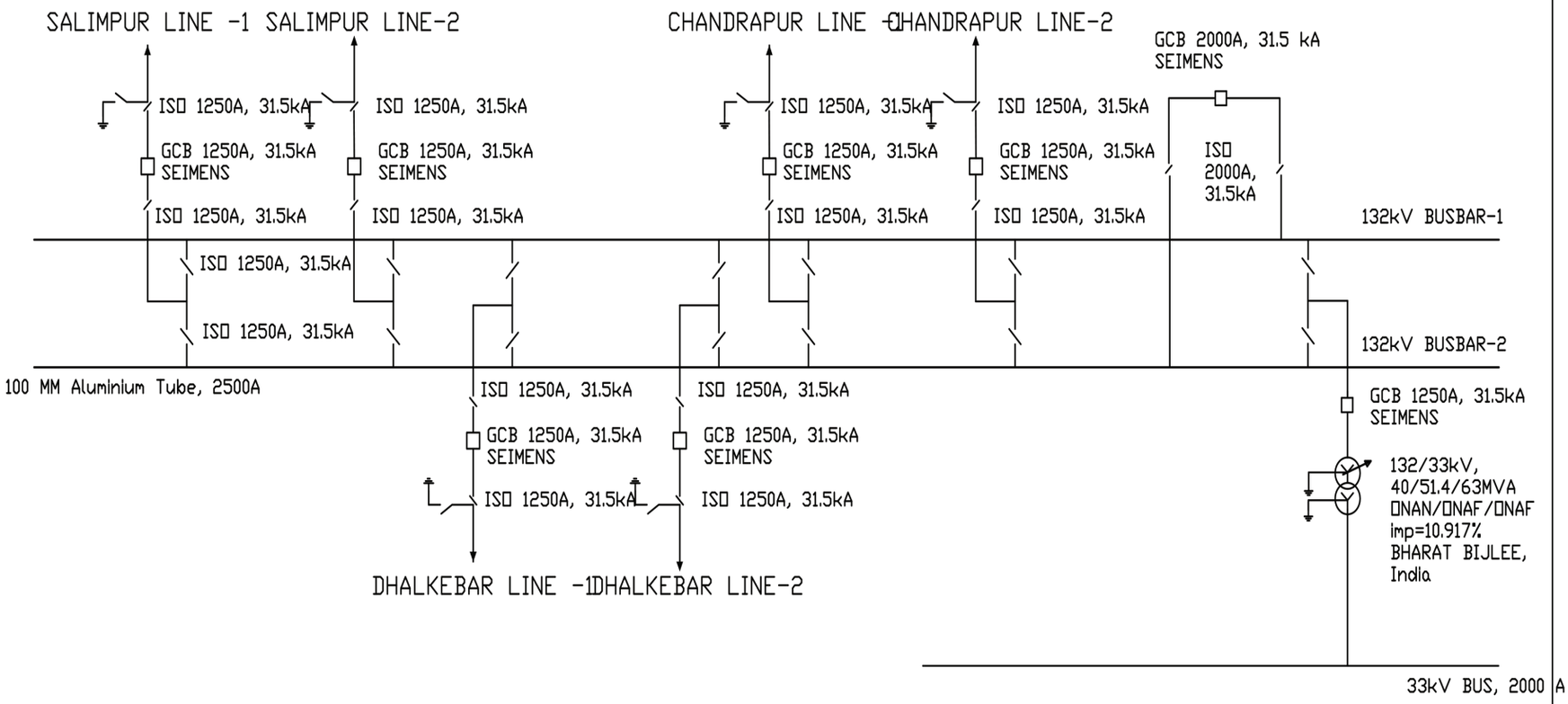
Chandranigahpur Substation with Double Bus System located at Chandranigahpur of Rautahat district, Narayani zone feeds power to Haripur, Gaur, Nizgad and Malangwa. Chandranigahpur Substation is connected with Nawalpur Sustation and Pathlaiya Substation through Double Circuit 132kV line. Chandranigahpur Substation was commissioned in 2008 with 132/33/11kV, 30MVA capacity. The Substation was further upgraded by addition of new 132/33kV, 30MVA Transformer Bay. Further, 2x30MVA Transformers were upgraded to 2x63MVA transformers.



19. NAWALPUR 132/33/11 kV SUBSTATION

Nawalpur Substation with Double Busbar System located at Lalbandi municipality-1,Sarlahi district offers the loop in loop out (LILO) for the Dhalkebar-Chandrapur 132 kV double circuit line. This substation consist of 1 no. of 132/33 kV , 63 MVA power transformer and 1 no. of 33/11 kV , 16 MVA power transformer. There are total 8 nos. of 132 kV bays including 2 nos. of bays for Nawalpur-Salimpur double circuit line. There are 4 nos. of 33 kV bays including 2 nos. of 33 kV outgoing feeders which ends the low voltage problems mostly in Malangwa & Lalbandi regions. There are also 3 nos. of 11 kV feeders for local distribution.

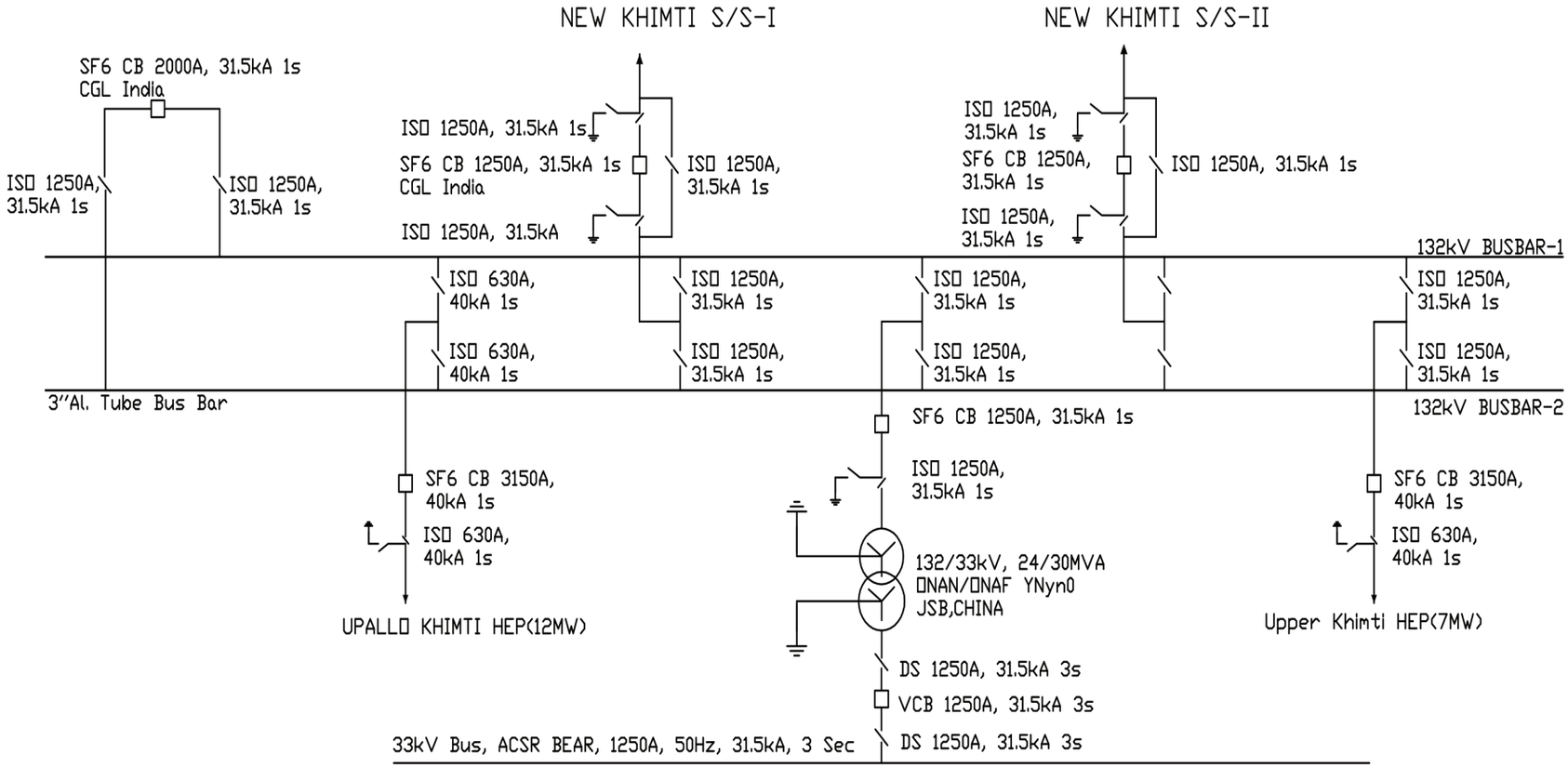
Installed Capacity : 132/33kV,
1*40/51.4/63 MVA
Max Demand 46.18MVA



20. GARJYANG SUBSTATION

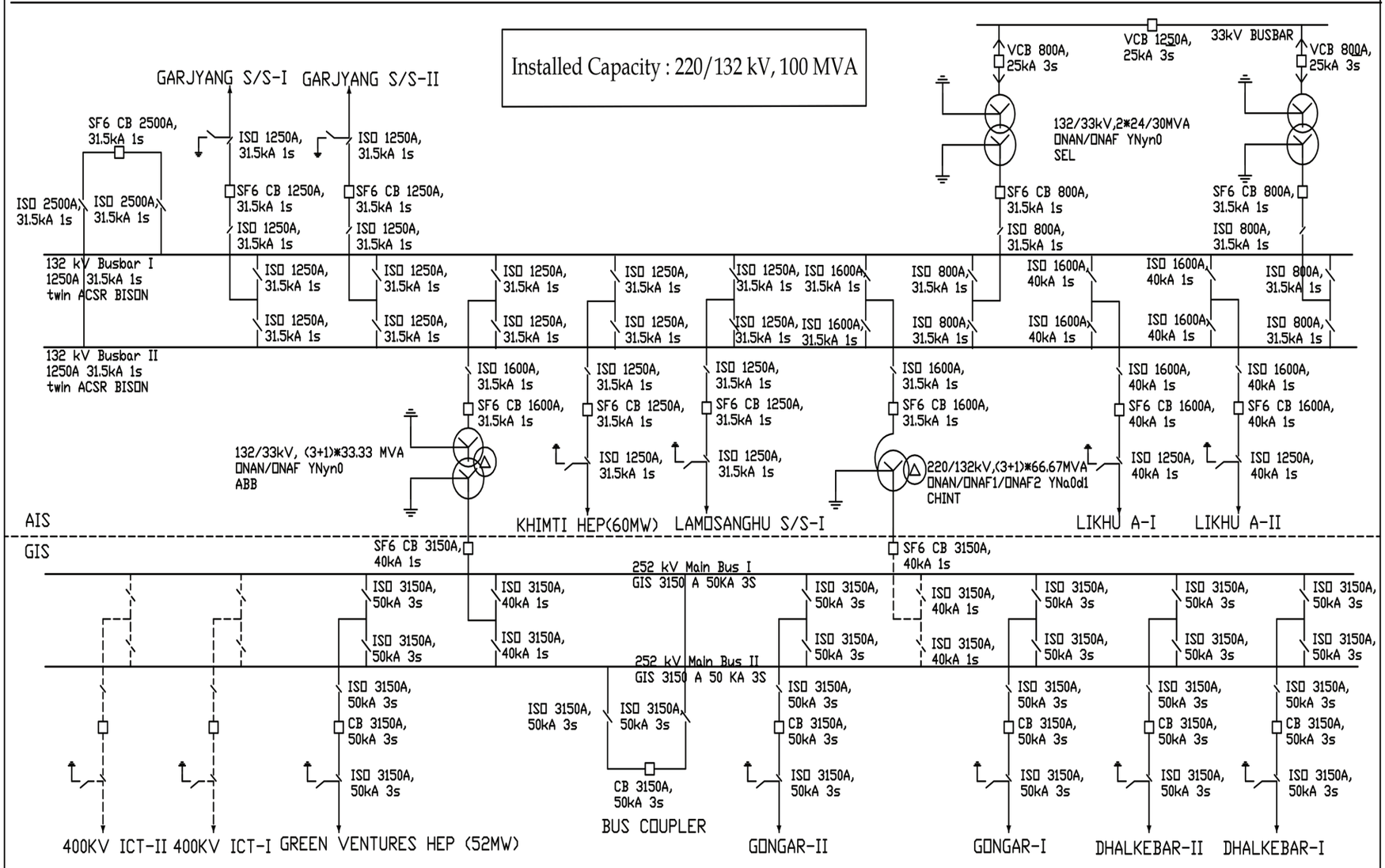
Garjyang Substation with Double Bus System located at Gokulganga RM-1,Chuhure Garjyang S/S evacuates POWER from hydropower projects located at Khimti river, Garjyang river, and Likhu river. This Substation was pre-commissioned on April 28, 2022 as per N-1 contingency plan. The Substation has 3+1 No. of 132/33kV, 8/10 MVA and 1 No. of 33/11kV, 6/8 MVA Power Transformer. Four 11kV local feeders are distributed from this Substation to supply mainly RM loads. Existing hydropower like Upper Khimti II HPP (7 MW) & Upallo Khimti HPP(12 MW)have commissioned 132kV bays. Nupche Likhu HPP (57.5MW) are constructing their 132 kV bays to be connected in this substation in near future. Chaka Khola HPP (2.8MW) is already connected in 33kV bay.

Installed Capacity : 132/33 kV, 24/30 MVA



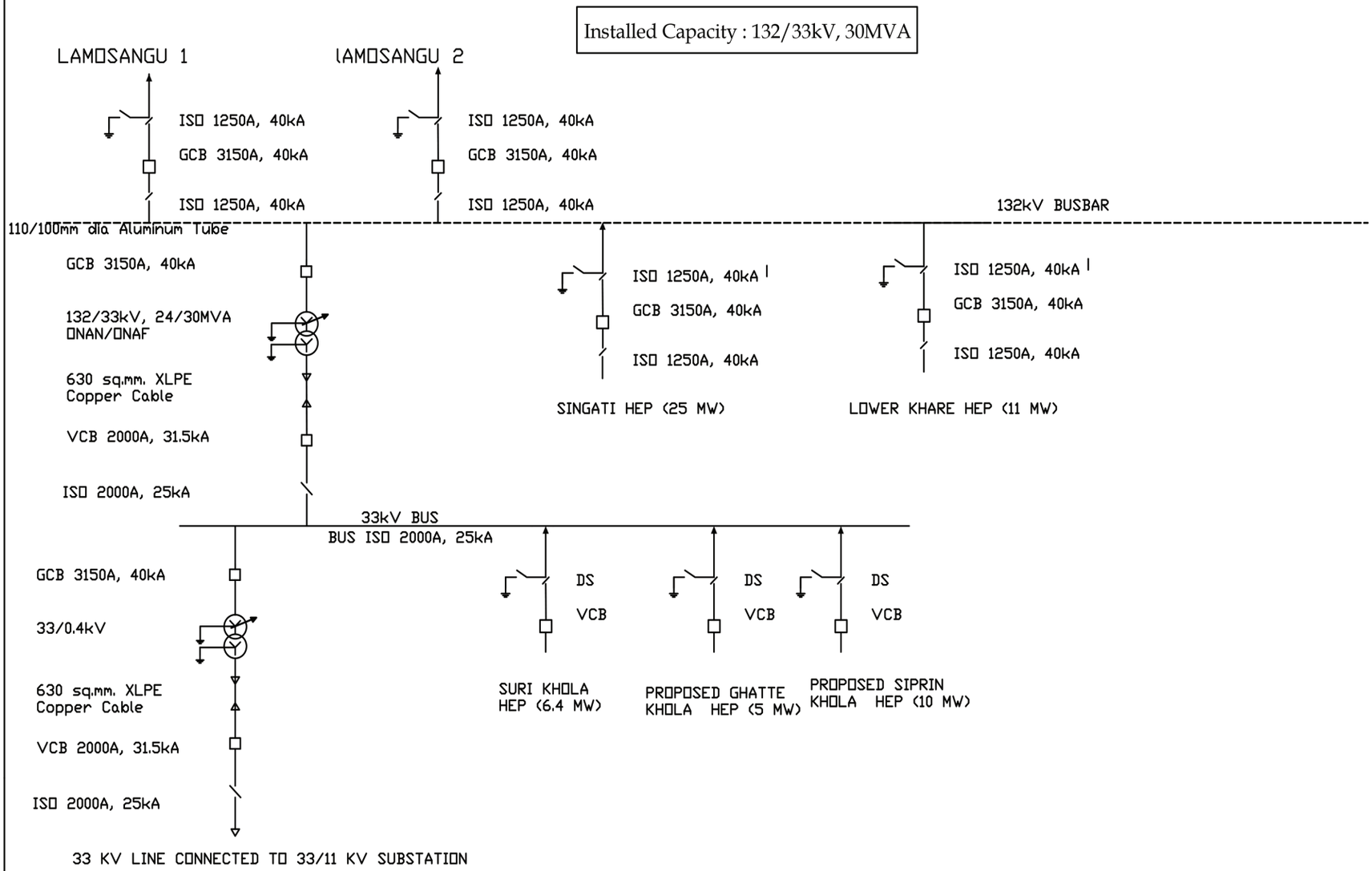
21. NEW KHIMTI SUBSTATION

New Khimti Substation with Double Bus System located at Manthali Municipality-13,Devitar New Khimti S/S evacuates POWER from hydropower projects located at Khimti river, Garjyang river, Tamakoshi river and Likhu river. This Substation was commissioned at 220 kV voltage level on October 12, 2021. The Substation has 3+1 Nos. of 220/132kV, 33.33 MVA Power Transformer 3+1 Nos. of 220/132kV 66.67MVA Autotransformer 2 Nos of 132/33kV 24/30 MVA power transformer and 1 No. of 33/11kV, 6/8 MVA Power Transformer. Five 33kV local feeders and three 11kV local feeders are distributed from this Substation to supply mainly RM loads.



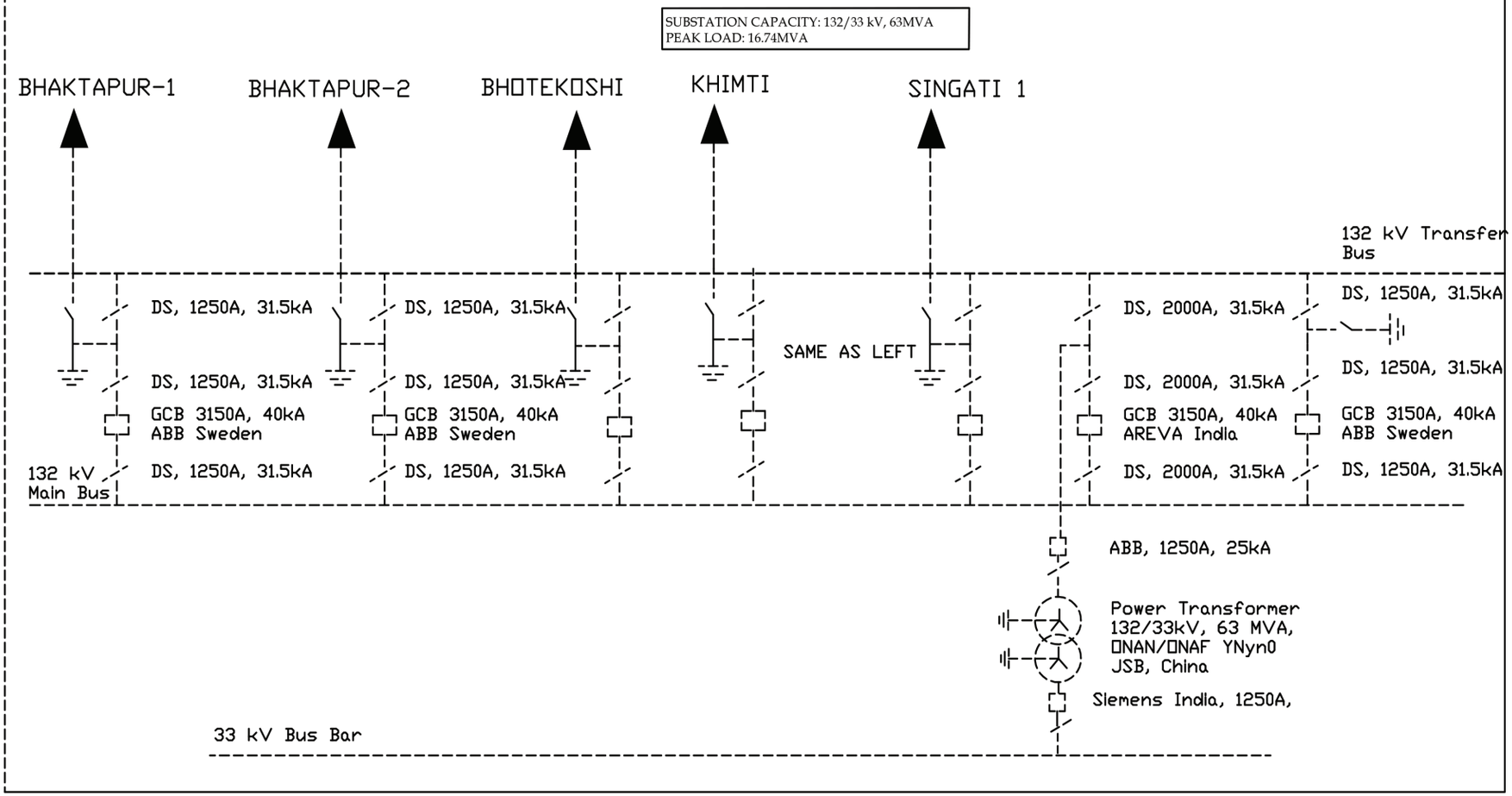
22. SINGATI 132/33 kV SUBSTATION

Singati Substation with Single Bus System located at Singati evacuates POWER from more than 12 hydropower projects located at Singati and Tamakoshi river corridor and being developed by IPPS to Singati Hub Substation. 132/33 kV Singati Substation is to be linked to existing Lamosangu Substation .



23. LAMOSANGHU SUBSTATION

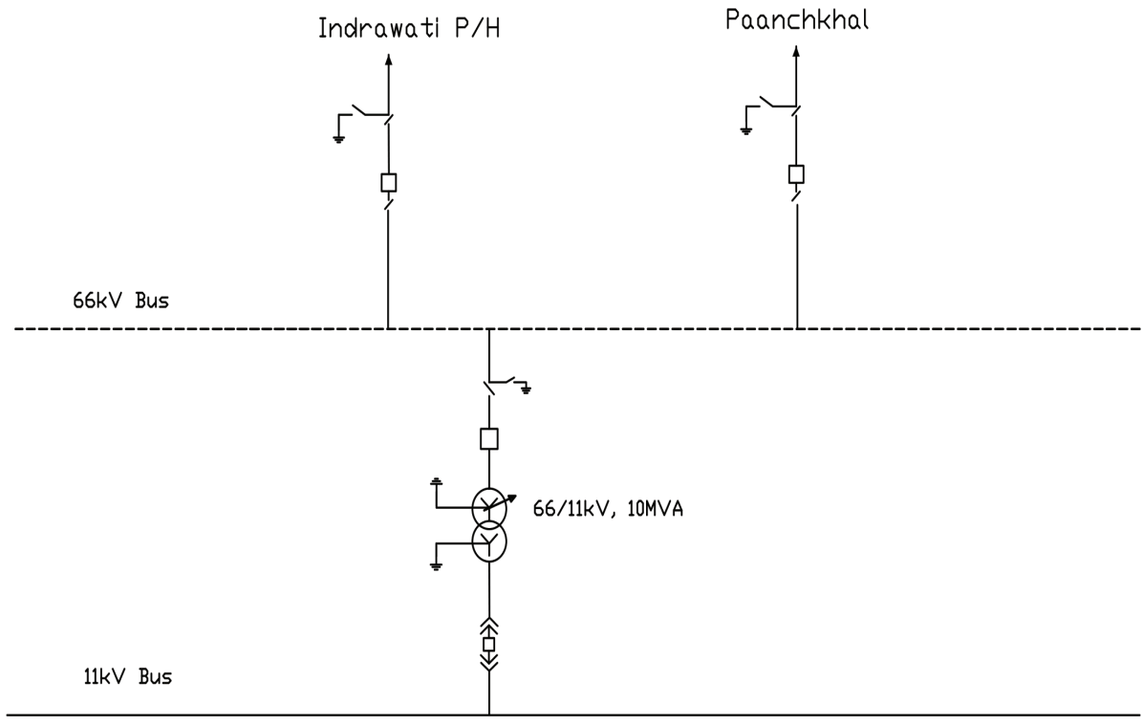
Lamasanghu Substation was a switching Substation located at Lamosanghu, near Sunkoshi Power House at Sindhupalchowk District. To evacuate the Power from 60MW Khimti Power Plant owned by one of the IPPs, Himal Power Limited and facilitate other upcoming power projects in the vicinity of Sunkoshi Corridor, this Substation was built in the year 1999 with the grant aid of Finnida. Most of the equipments are from the manufacturer ABB, Finland. This Substation was built with one Main Bus and one Transfer Bus having Three number of Line Bays (One Bay for Khimti Power Plant and Two Line Bays for Bhaktapur). One number of 132kV Line Bay for Bhotekoshi Power Plant owned by IPP for evacuating 36MW power was constructed in the Year 2002. To provide the connection points to the upcoming IPPs to evacuate power through 33kV System, Grid Operation Department iniatiated and built new 132/33kV, 15MVA Transformer Bay at Lamosanghu Substation in the Year 2008. The 15MVA Power Transformer was upgraded to 30MVA in 2012 , which was further upgraded to 63MVA in 2024 for evacuating more Power from 33kV.



24. INDRAWATI SUBSTATION

Indrawati Substation located at Indrawati Sindhupalchok district, Bagmati zone was constructed to evacuate the power from Indrawati power house and to feeds the power to Melamchi area.The installed capacity of Indrawati substation is 10MVA.

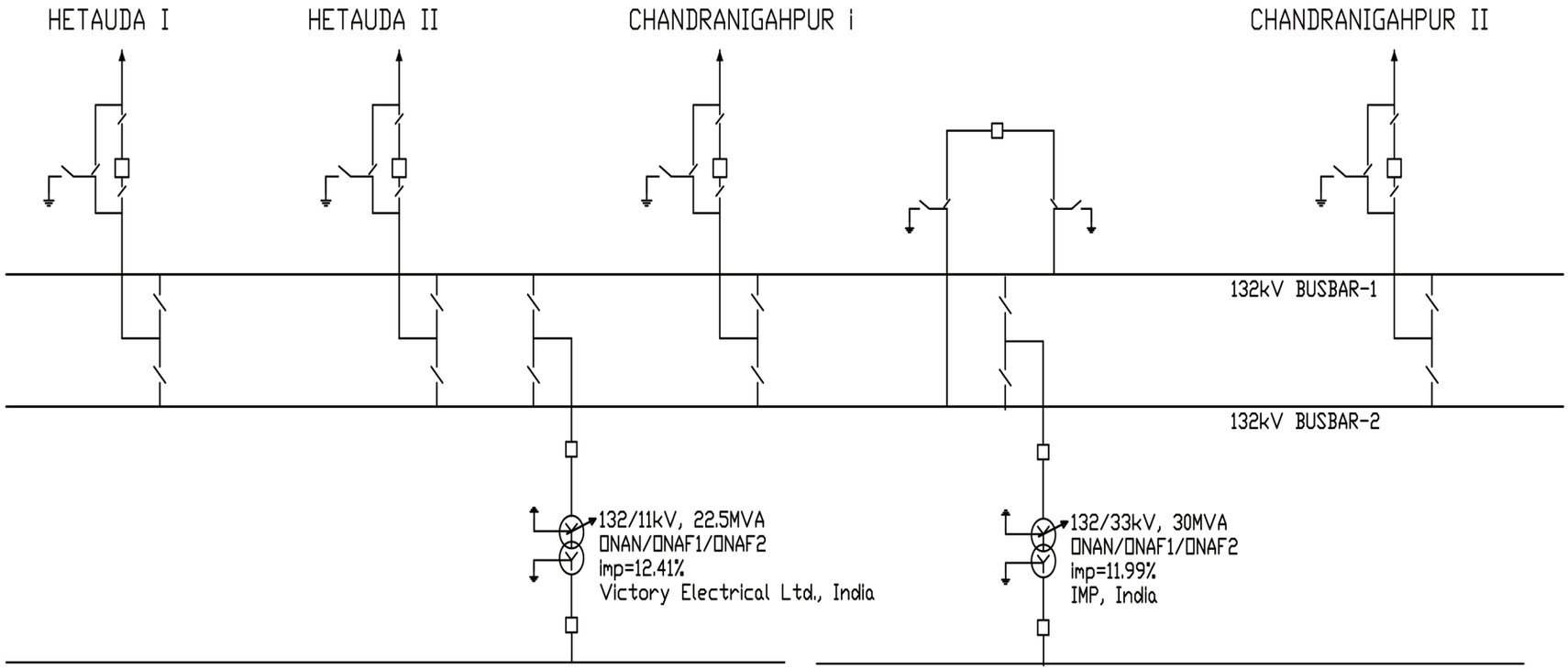
Installed Capacity : 66/11kV, 10MVA
Maximum Demand : 6.68 MVA



25. PATHLAIYA SUBSTATION

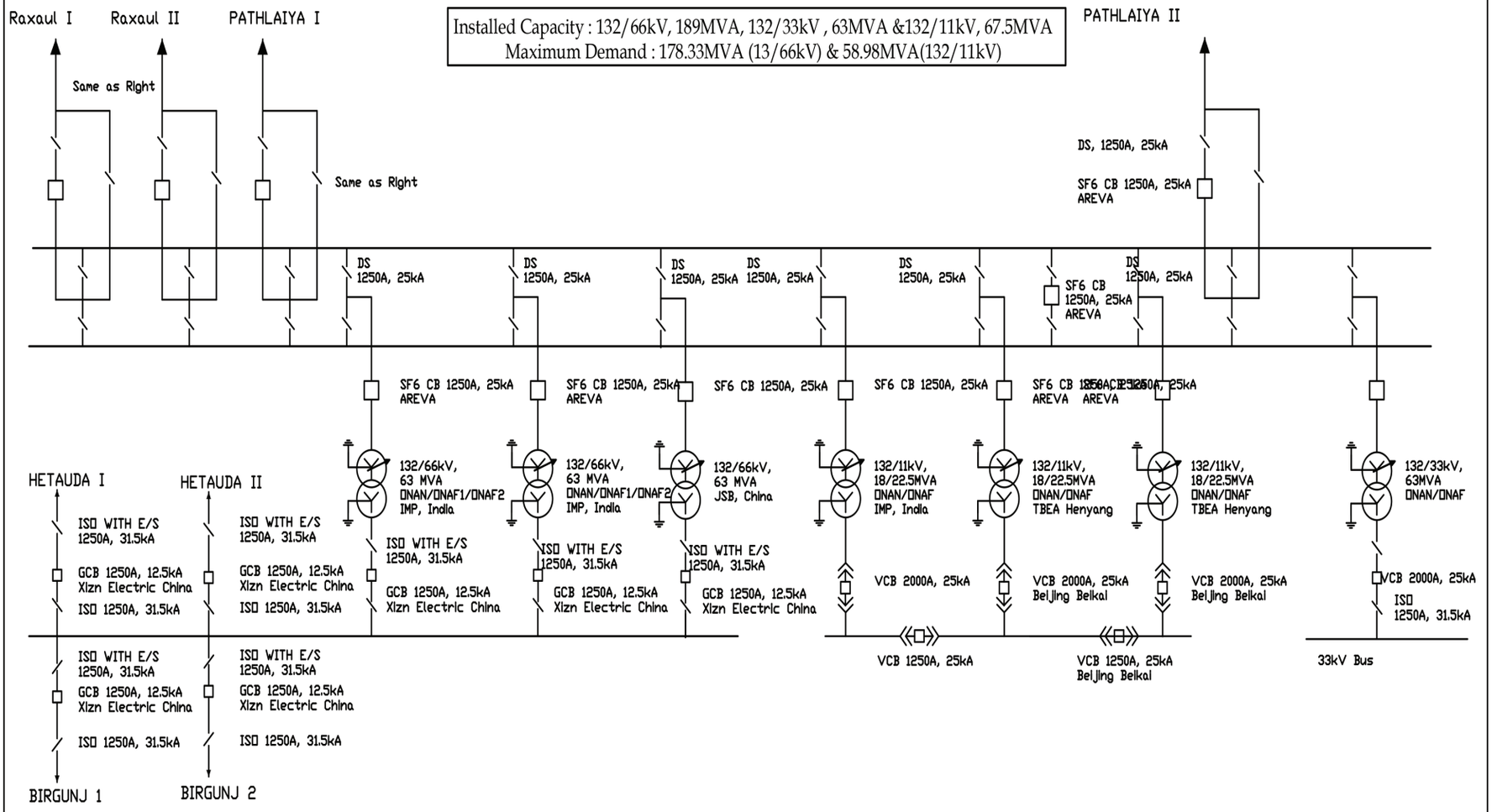
Pathlaiya Substation with Double Bus System located at Piluwa of Bara district, Narayani zone feeds power to Pathlaiya, Piluwa and Badhaharwa. Pathlaiya Substation is connected with Hetauda and Chandranigahpur Substation through 132kV Lines. Pathlaiya Substation was commissioned in 2012 with one no. of 132/11kV, 22.5MVA capacity. In 2021, one set of three phase 132/ 33kV 30 MVA Transformer is installed to cater increasing load in 33 kV.

Installed Capacity : 132/11kV, 22.5MVA , 132/33kV, 30MVA,
Maximum Demand : 9.83 MVA



26. NEW PARWANIPUR SUBSTATION

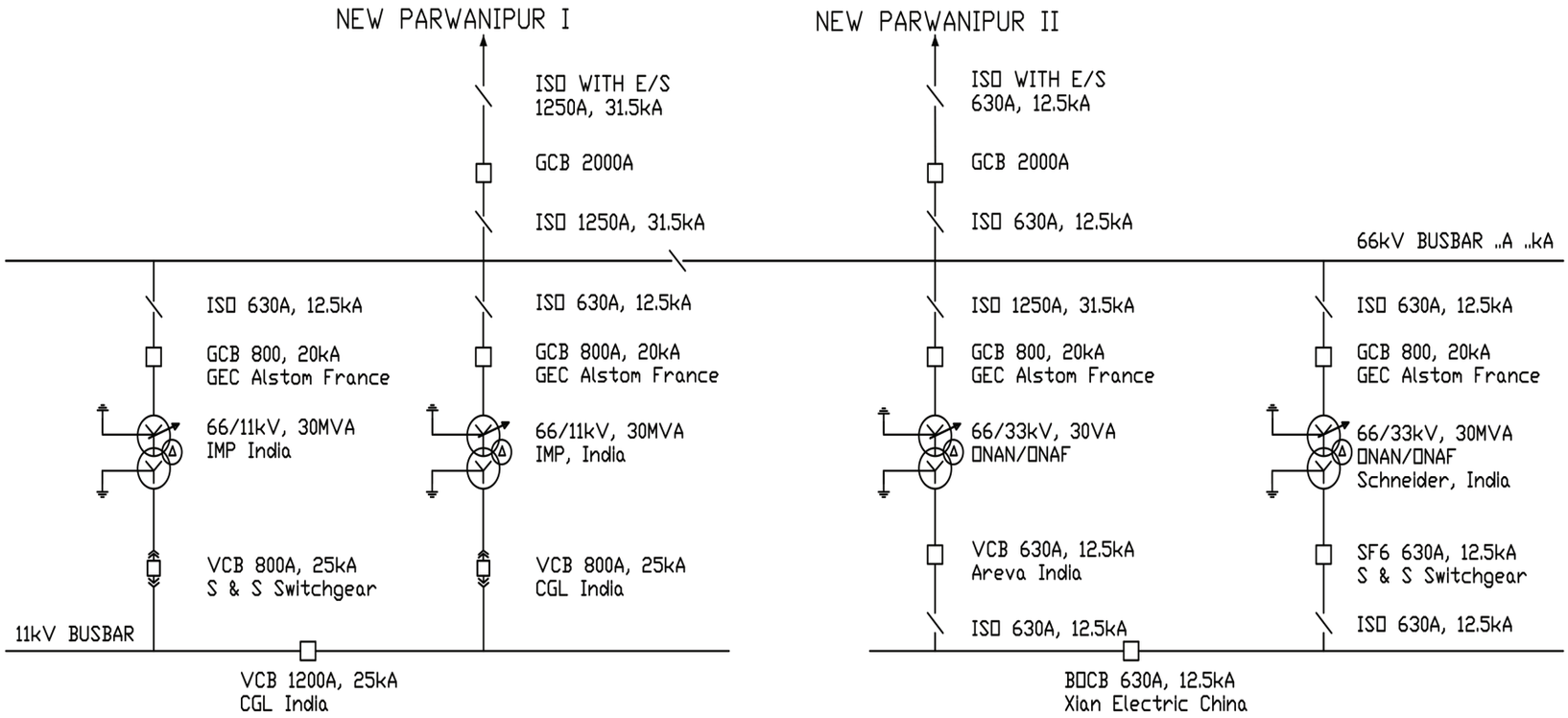
New Parwanipur Substation with Double Bus System located at Parwanipur of Parsa district, Narayani zone feeds power to Jitpur, Parwanipur, Nitanpur and Birgunj. New Parwanipur Substation is connected with Chandranigahpur and Hetauda Substation through 132kV Lines. New Parwanipur Substation was commissioned in 2007 with two nos of 132/11kV, 22.5MVA capacity. 66/11kV Old Parwanipur Substation was replaced by 132/11kV New Parwanipur Substation. 132/66kV, 45MVA interconnection Power Transformer was commissioned in the begining of F/Y 2008/09 and a new 132/66kV, 45MVA Bay added in 2012 . Further the 132/33kV, 2x45MVA was upgraded to 2x63MVA in the year 2015. Similarly, a new 132/11kV, 22.5MVA Transformer Bay was added in 2015 and 132/66kV, 63MVA Transformer Bay was added in 2021. This substation is also connected to Raxaul (India) via double circuit 132 kV line. Also, new 132/33kV, 63MVA Transformer was installed in 2023.



27. BIRGUNJ SUBSTATION

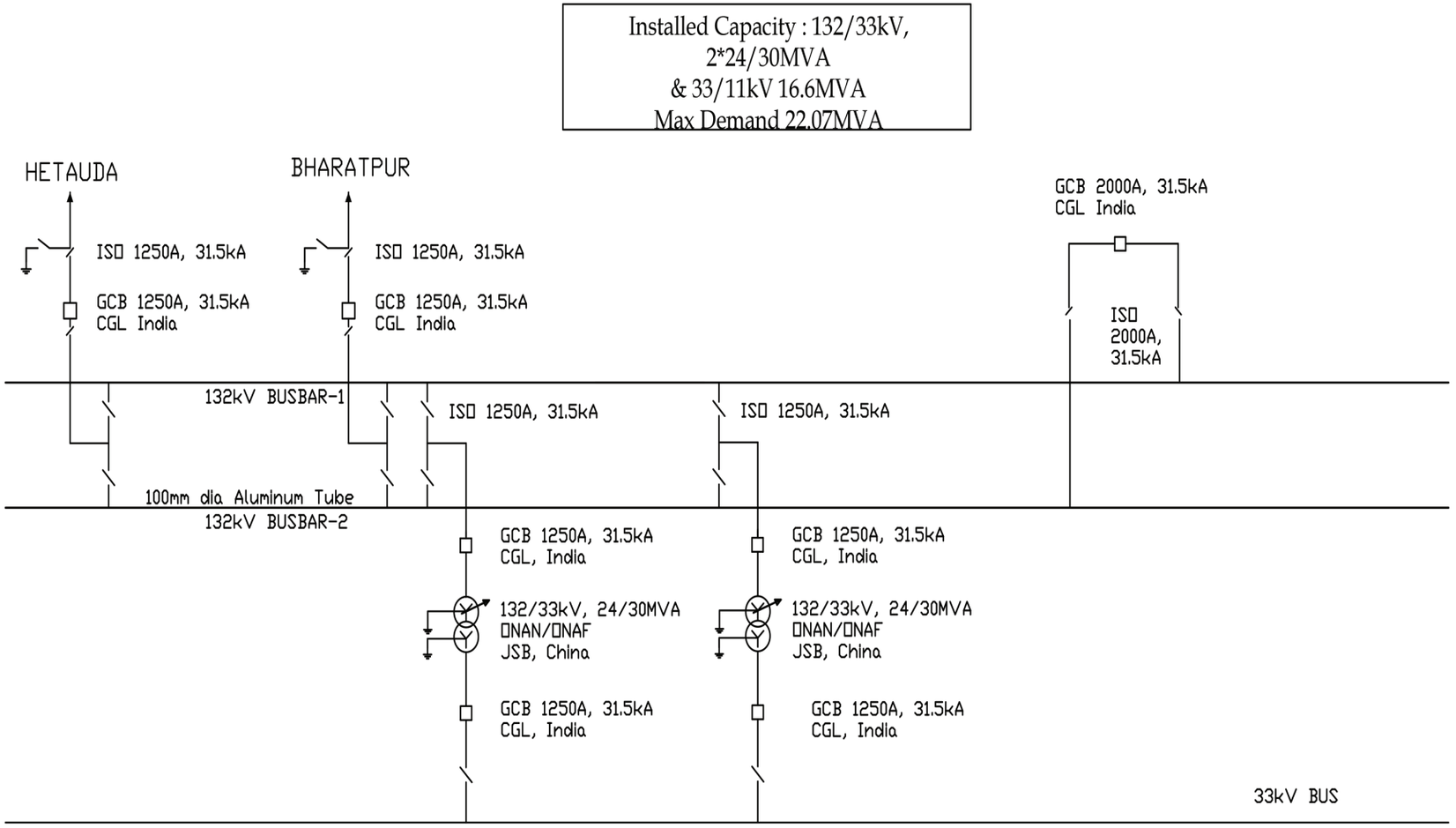
Birgunj substation located at Birgunj Sub metropolitan city of Parsa district, Narayani zone feeds power to Pokhariya, Raxaul, Kalaiya and Birgunj city. Birgunj substation is connected with Hetauda substation through 66kV Double Circuit Transmission Line. Birgunj Substation was commissioned in 1972 with 66/11kV, 1.5MVA capacity, which was later upgraded to 6MVA.. In 1989 the new Transformer Bay with two nos of 66/33kV, 12.5MVA was added in the existing system. The existing 6MVA Transformer was replaced in 2005 with two nos of 66/11kV, 7.5MVA capacity, which was further upgraded to two nos of 66/11kV, 15MVA capacity. Due to the severe voltage problem and the high demand of reactive VAR in this area a 33kV, 5MVAR and 11kV, 5MVAR Capacitor Banks has been placed. Due to increasing demand of industrial load this area is facing problems of low voltage so an additional 33kV, 10MVAR and 11kV, 10MVAR Capacitor Banks with new bay were installed in April 2009. Further the existing 66/11kV, 2x15MVA was upgraded to 2x30MVA in 2014. One of the 66/33kV, 12.5MVA was upgraded to 30MVA in 2019.

Installed Capacity : 66/33kV, 60MVA & 66/11kV, 60MVA
Maximum Demand : 51.21MVA & 45.72 MVA



28. PURBI CHITWAN 132/33/11 kV SUBSTATION

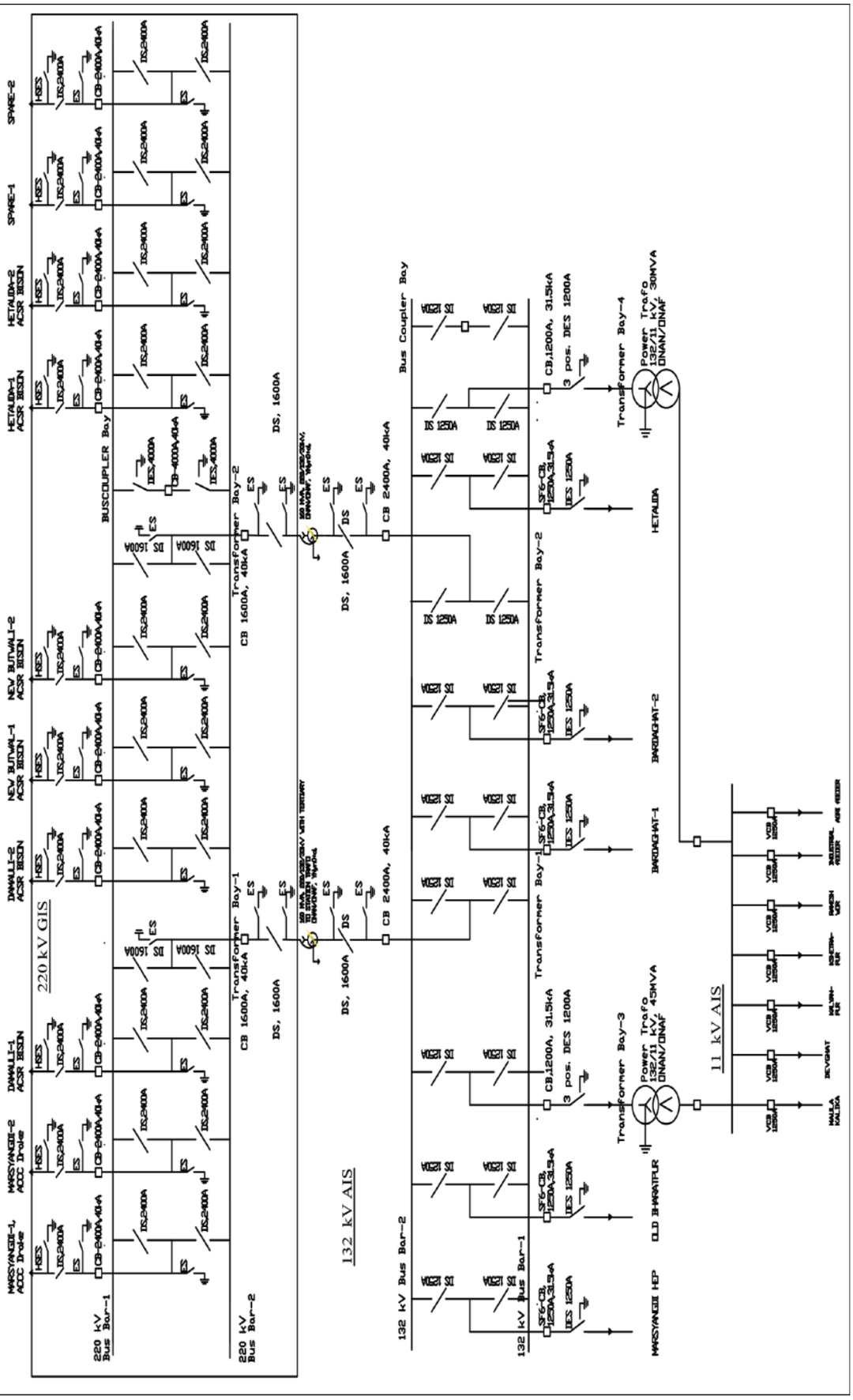
Purbi Chitwan Substation with Double Bus System located at Rapti M.P-06, Hardi, Chitwan feeds power to existing 33/11 kV Parsa Substation via 33kV double circuit sub-transmission line and to the area nearby substation via 11kV feeders. Purbi Chitwan Substation has Loop in Loop out of Hetauda-Bharatpur 132kV Transmission Line.



29. NEW BHARATPUR SUBSTATION

New Bharatpur substation is a double bus bar substation with 220 kV portion GIS system and Remaining 132 kV and 11 kV with AIS system. This Substation is located at Aanptari, Bharatpur of Chitwan district in Bagmati Province. It receives powers from Marsyangdi Hydropower at 132 kV and is connected to Markichowk substation, New Butwal Substation and Hetauda Substation via 220 kV lines and Old Bharatpur substation via 132 kV line. It feed Maulakalika, Devghat, Kalyanpur, kshetrapur and Rameshwor area along with some industrial and agricultural area in Chitwan district through 11 kV Feeder.This substation has two 160 MVA, 220/132/33 kV transformers, one 45 MVA, 132/11 kV and another one of 22.5 MVA, 132/11 kVtransformer . It has ten numbers of 220 kV line bays, 5 numbers of 132 kV and 7 number of 11 kVfeeders . This substation was charged 25th July 2023 and is operating at 220 kV voltage level.

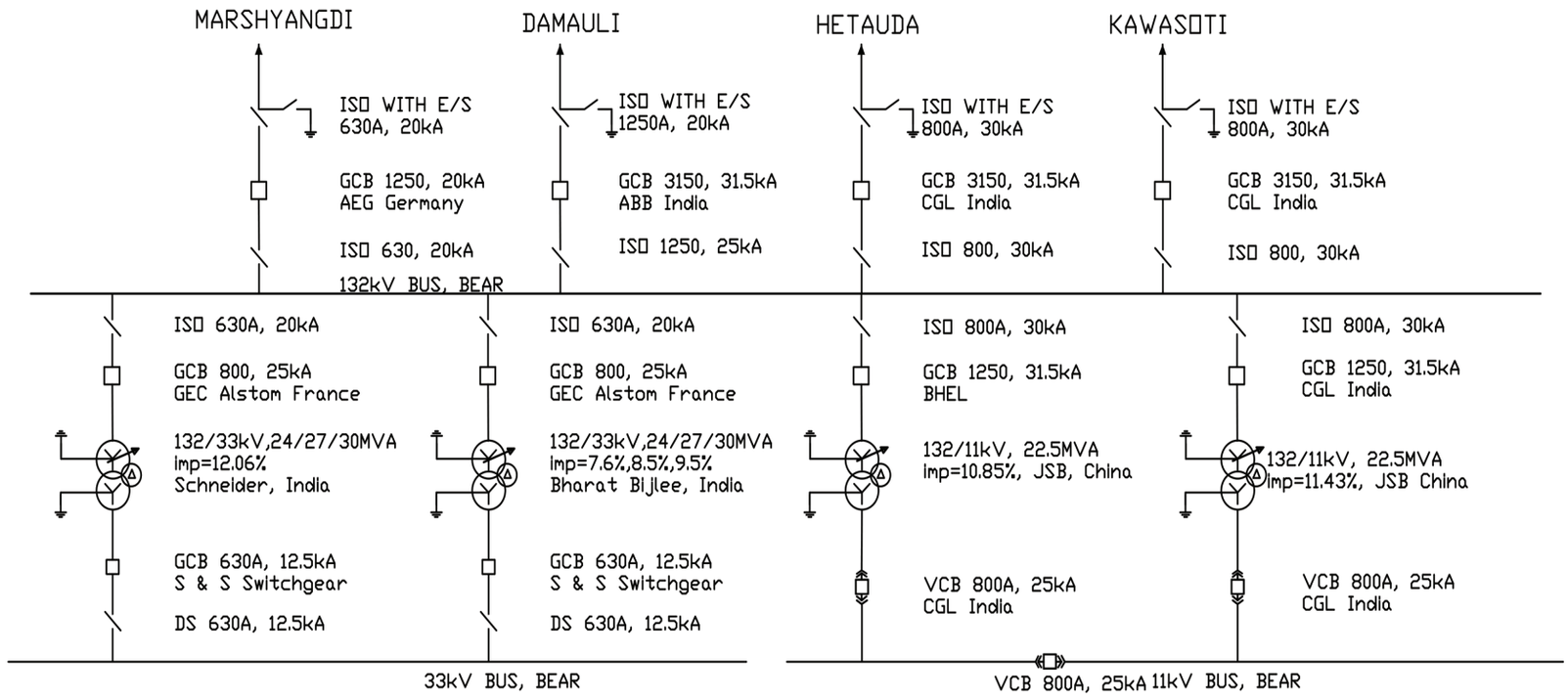
Installed Capacity : 220/132 kV, 2x160MVA
132/11 kV , (45+22.5) MVA
Maximum Demand : 258 MVA



30. BHARATPUR SUBSTATION

Bharatpur Substation located at Bharatpur of Chitwan district, Narayani zone feeds power to Kawasoti, Parsa, Chanauli, Narayanghat, Bharatpur and Gaidakot. Bharatpur Substation is fed by Marshyngdi Power House through 132kV Single Circuit Line. Bharatpur Substation is connected with Damauli, Hetauda and Bardghat Substations through 132kV Single Circuit Lines. Bharatpur Substation was commissioned in 1979 with 132/11kV, 3 x 3.35MVA capacity. The Substation capacity was upgraded by addition of 132/66kV, 3x3.35MVA and 66/11kV, 6.3MVA Transformers in cascade. The Substation was upgraded in 1995 with the addition of 132/33kV, 15MVA Transformer with New Transformer Bay and three 33kV Line Bays supplying to 33kV Kawasoti, Parsa, Chanauli Substations. The 132/33kV, 15MVA Transformer was replaced by 132/33kV, 30MVA Transformer in 2000 and 132/66kV and 66/11kV Transformers was replaced by 132/11kV, 15MVA Transformer in 2004. Further 132/11kV, 22.5MVA Transformer Bay was added in 2011. Again 132/33kV, 30MVA Transformer Bay was added in 2017.

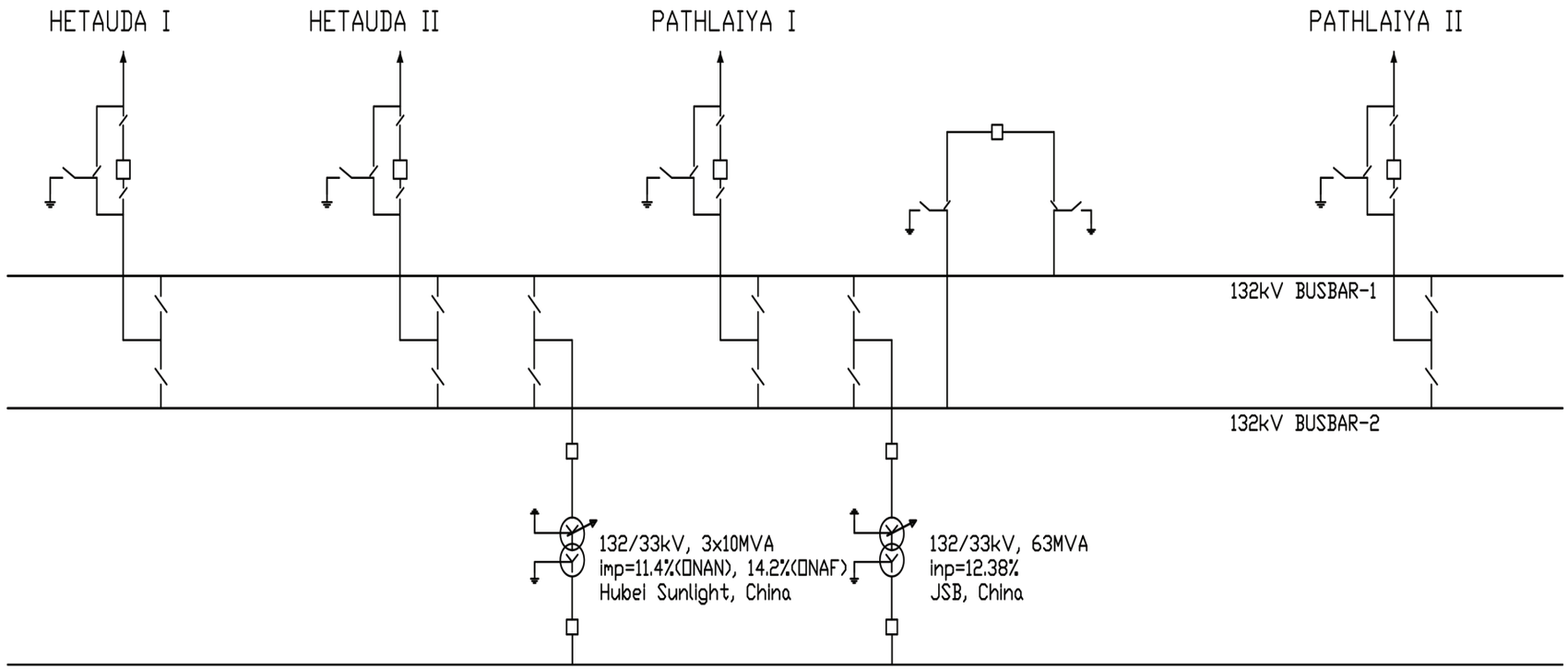
Installed Capacity :132/33kV, 60MVA & 132/11kV, 45MVA
Maximum Demand : 37.95MVA & 38.63MVA



31. KAMANE SUBSTATION

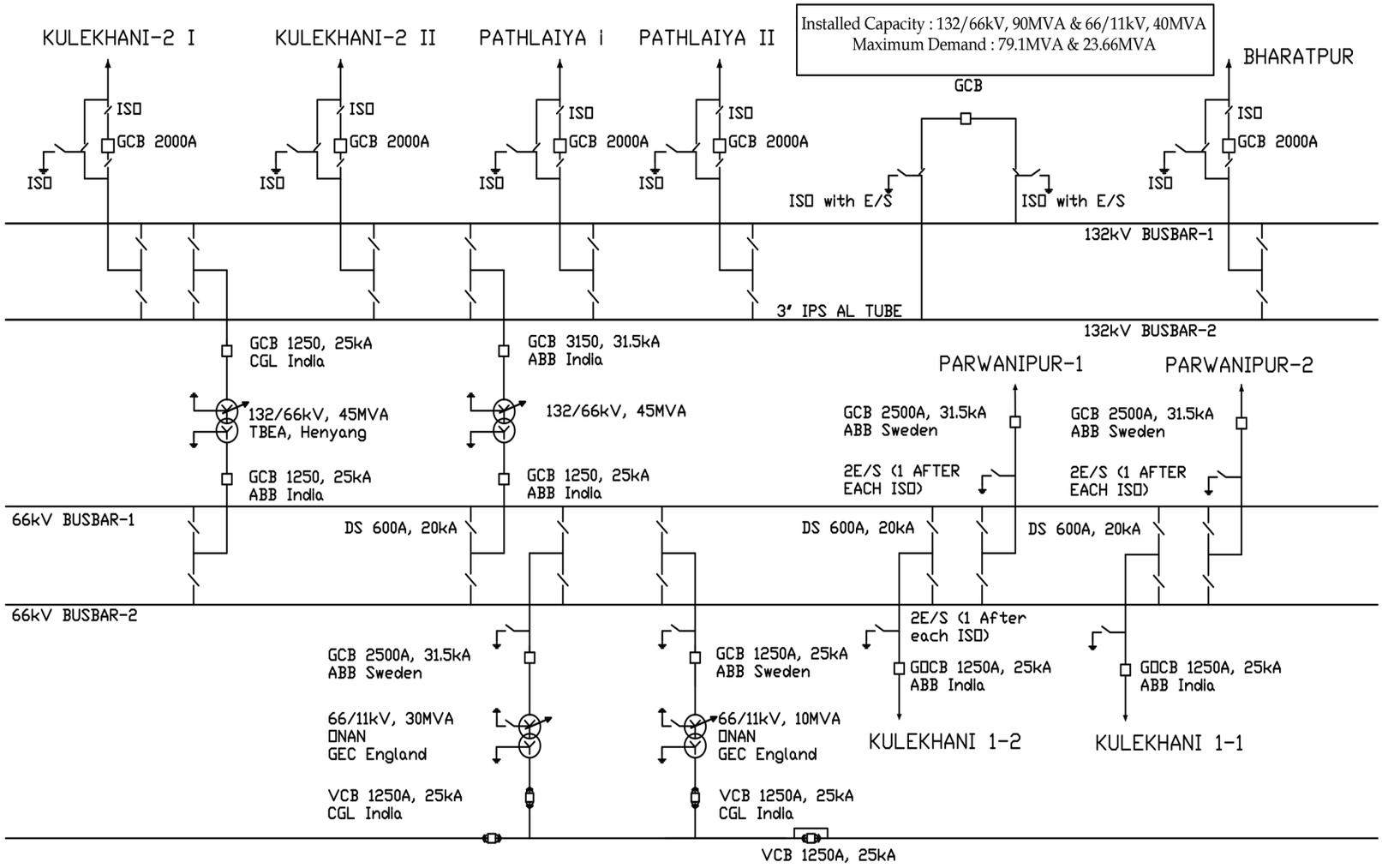
Kamane Substation with Double Bus System located at Kamane of Makwanpur district, Narayani zone feeds power to Shivam Cement and Hetauda Industrial District. Kamane Substation is connected with Hetauda and Pathlaiya Substation through 132kV Lines.Kamane Substation was commissioned in 2015 with one set of single phase 132/33kV, 3x10MVA capacity.The substation was further upgraded with the 132/33KV,63MVA Bay.

Installed Capacity : 132/33kV, 93MVA
Maximum Demand : 47.79MVA



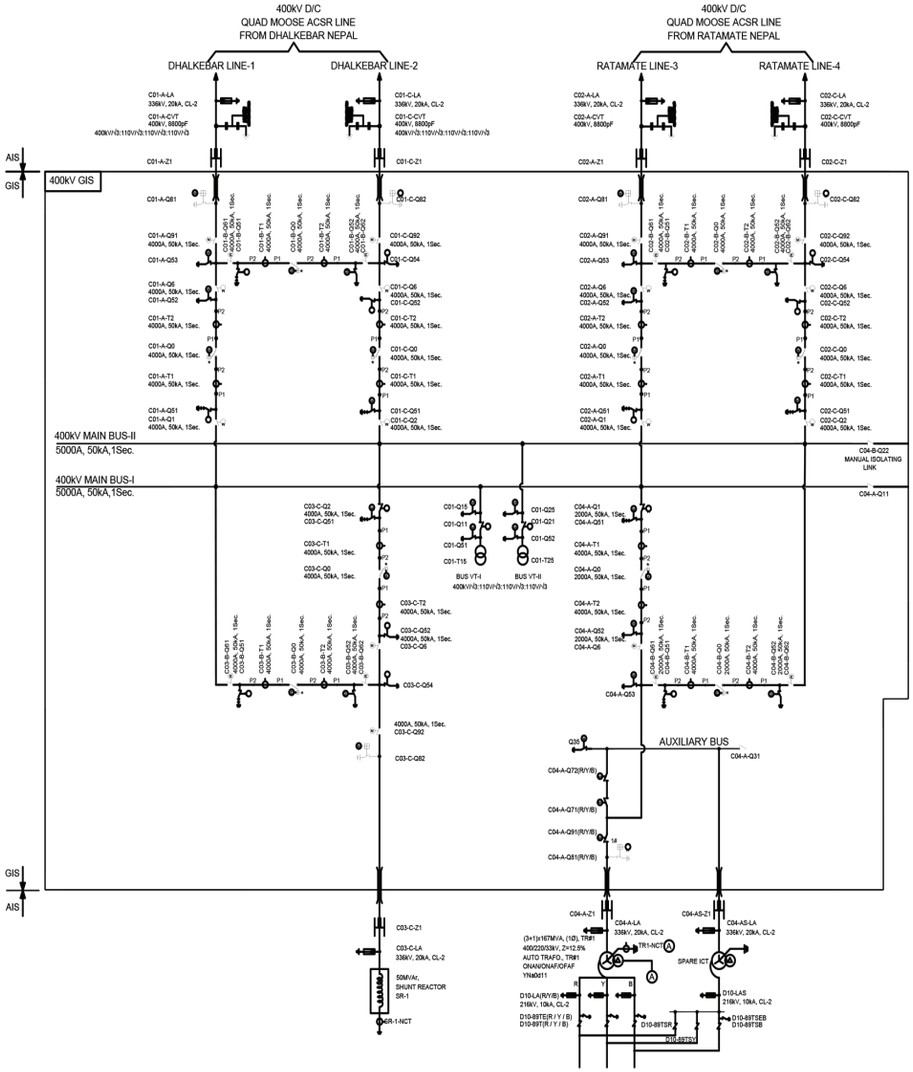
32. HETAUDA SUBSTATION

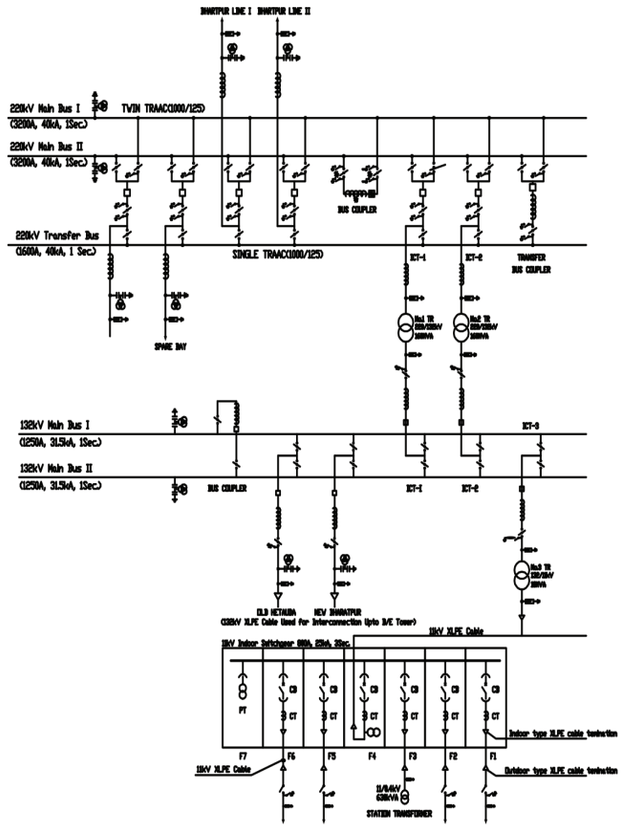
Hetauda Substation with Double Bus System in both 132kV and 66kV Voltage level located at Hetauda municipality of Makwanpur district, Narayani zone feeds power to Chaughada, HID and Bhainse. Hetauda Substation is fed by Kulekhani II Power House through 132kV Single Circuit Line and Kulekhani I Power House through 66kV Double Circuit Line. Hetauda Substation is also fed by Hetauda Diesel Plant through 11kV System. Hetauda Substation is connected to New Parwanipur, Chandranigahpur and Bharatpur through 132kV Lines. Hetauda Substation is also connected to Birgunj Substation through 66kV Double Circuit Line along with some Bulk Consumers in the Birgunj Corridor. Hetauda Substation was commissioned in 1972 with 66/11kV, 1.5MVA capacity. The substation was upgraded with 132/11kV, 3 x 3.35MVA capacity in 1984 and later with 132/66kV, 20MVA. In 1985, 132 kV Dhalkebar I bay was added. In 1989, 132kV Kulekhani II was connected with the Substation. To cope with the increasing demand new 132/66kV, 20MVA Transformer with New Transformer Bay was added in 1999. In 2002, New 132kV Dhalkebar II line was added to the Substation. Further the existing two 66/11kV, 6MVA Transformerswas replaced by two 10MVA Transformers by 2009. The existing $\frac{132}{66}$kV, 2x20MVA was further upgraded to 2x45MVA in 2015. In 2023, one of the $\frac{132}{66}$ kV 10MVA Transformer is repalced by 30 MVA Transformer.



33. NEW HETAUDA SUBSTATION

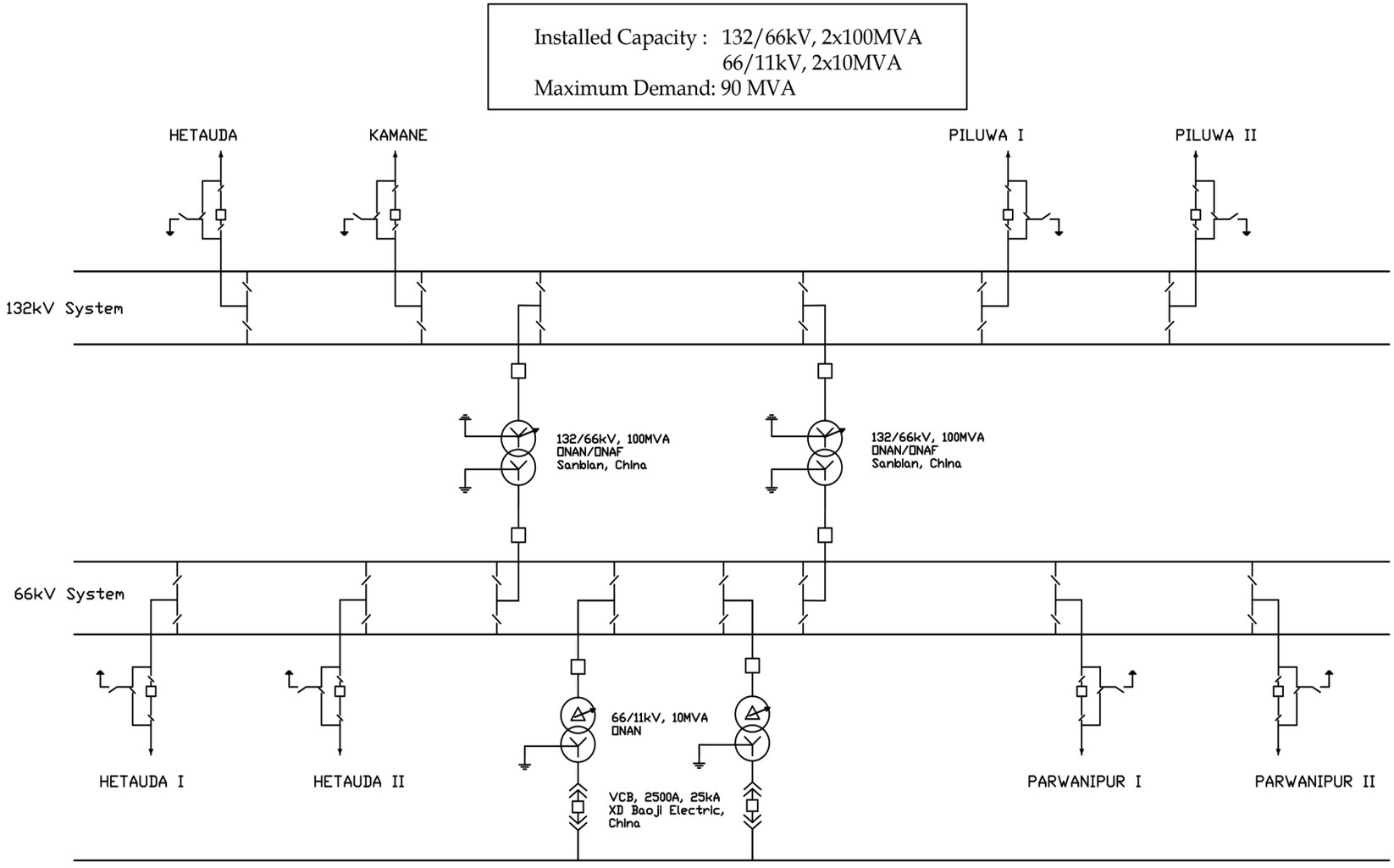
Hetauda substation with one and half bus system in 400kV level, Double busbar with transfer bus system in 220kV voltage level and Double busbar system in 132kV voltage level, located at Thanabharyang, Hetauda of Makwanpur district of Bagmati Province, is currently connected to New Bharatpur substation with 220kV Double circuit line and Old Hetauda substation with 132kV Double circuit line and is expected to connect with Dhalkebar and Ratamate substations with 400kV Double circuit in future. This substation was commissioned in 2024 with 400/220/132/11kV, 831MVA transformer capacity. It also supplies local distribution feeder by 11kV feeders.





34. AMLEKHGUNJ SUBSTATION

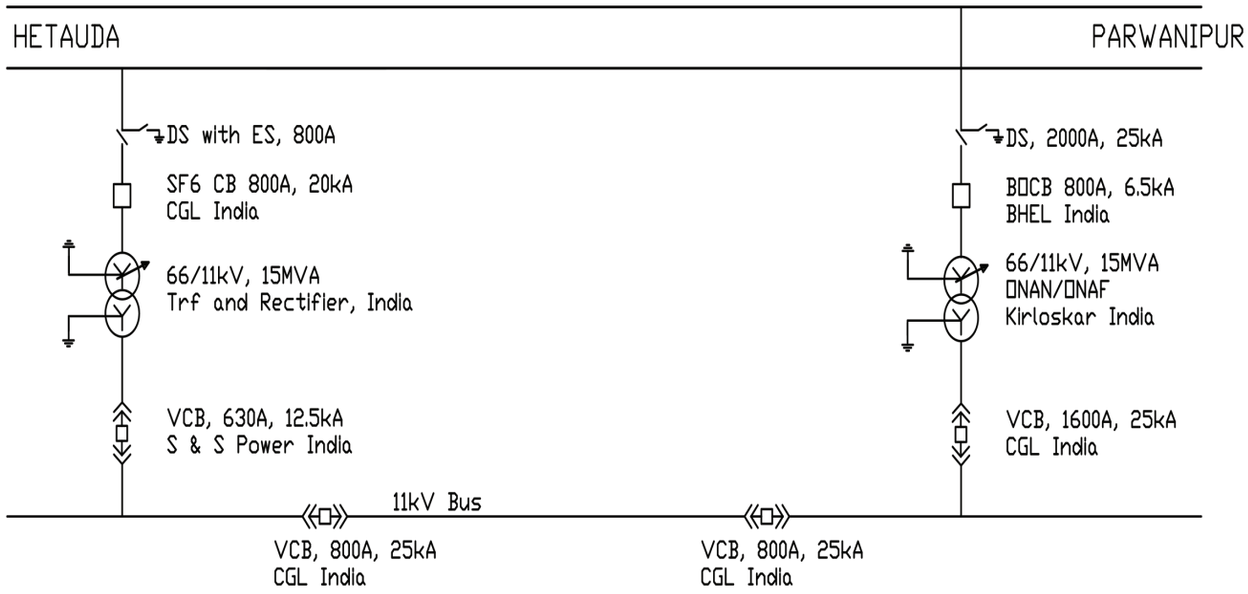
Amlekhgunj GIS Substation, located in Amlekhgunj of Bara District, Madhesh Pradesh, supplies power to the Amlekhgunj area and the industrial region of Simara. Currently, the substation was commissioned establishing a 132 kV Loop-In Loop-Out (LILO) from the Hetauda–Piluwa 132 kV Double Circuit Line, and a 66 kV LILO from Hetauda–Parwanipur 66 kV Double Circuit Line with the installation of 132/66 kV, 2×100 MVA and 66/11 kV, 2×10 MVA transformers, significantly enhancing the reliability of power supply in the region



35. SIMRA SUBSTATION

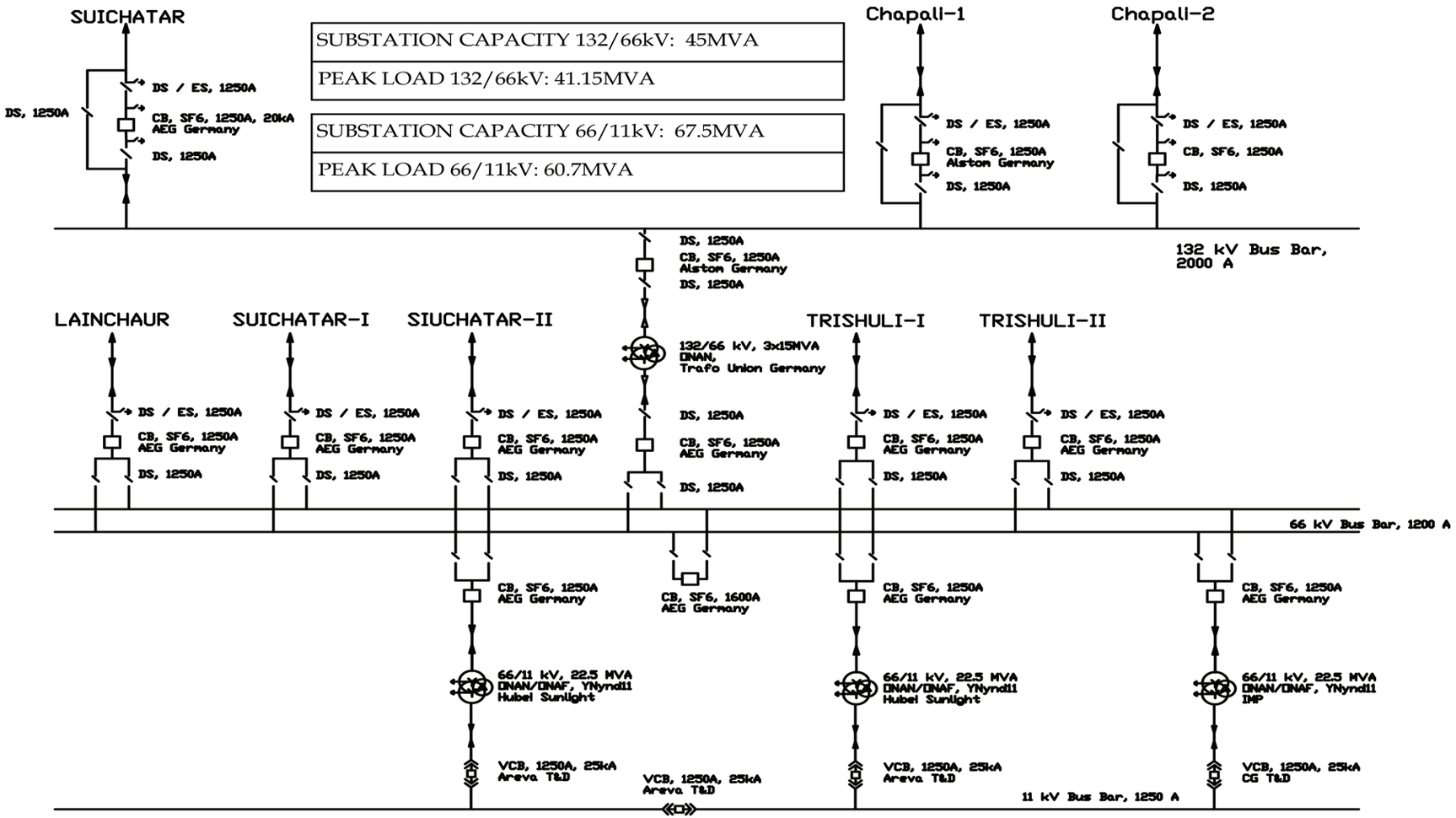
Simra Substation located at Simra of Bara district, Narayani zone feeds power to Jitpur, Simra, Dumarwana and Narwasti. Simra Substation receives power from Hetauda - Birgunj 66kV Double Circuit line through T - connection. Simra Substation was commissioned in 1972 with 66/11kV, 1.5MVA capacity. In 1993 the existing 1.5MVA Transformer was replaced by 66/11kV, 6MVA Transformer. Subsequently in 1995 the Substation was upgraded by addition of 66/11kV, 7.5MVA Transformer. Again in 2007 a New Transformer Bay with 66/11kV, 6.3MVA Transformer was added. In 2016 the existing 7.5MVA and 6.3 MVA Transformers were replace by 2x15MVA Transformers. 6MVA Transformer has been out of service since 2015.

Installed Capacity : 66/11kV, 30MVA
Maximum Demand : 15.49 MVA



36. BALAJU SUBSTATION

Balaju Substation with Single Circuit located at the Balaju of Kathmandu district, Bagmati zone feeds power to Nagarjuna, Swayambhu, Maharajgunj, Bishnumati, BID, Nayabazar and Dharmasthali. This substation is connected to Siuchatar with 132 Single Circuit & Chapali Substation with 132kV Double Circuit Transmission Line. It is also linked with Lainchaur Substation by 66kV Single Circuit and Siuchatar Substation by double circuit 66kV Transmission System. Trishuli Power Plant to this Substation with Double Circuit and to contribute in load demand of Kathmandu Valley. This Substation was built with two numbers of 66/11kV, 3x3.75MVA Capacity in the year 1967 along with construction of Trishuli Power House. Addition of 132kV Transformer Bay with 3x15MVA Capacity, 132kV single Bay for Siuchatar, double 66kV line bays for Siuchatar, single 66kV Bay for Lainchaur and replacement of old 66/11 Transformer with new 2x10MVA Power Transformer were augumented with complete GIS system in the Year 1989. In 2009 the two 66/11kV, 10MVA Transformers were replaced by new 22.5MVA Transformers. In 2017 Construction of Chapali 132kV Bay for evacuating Power of Khimti and Bhotekoshi was carried out . A bay of 66/11 kV ,22.5 MVA Tranasformer is added in 2019.

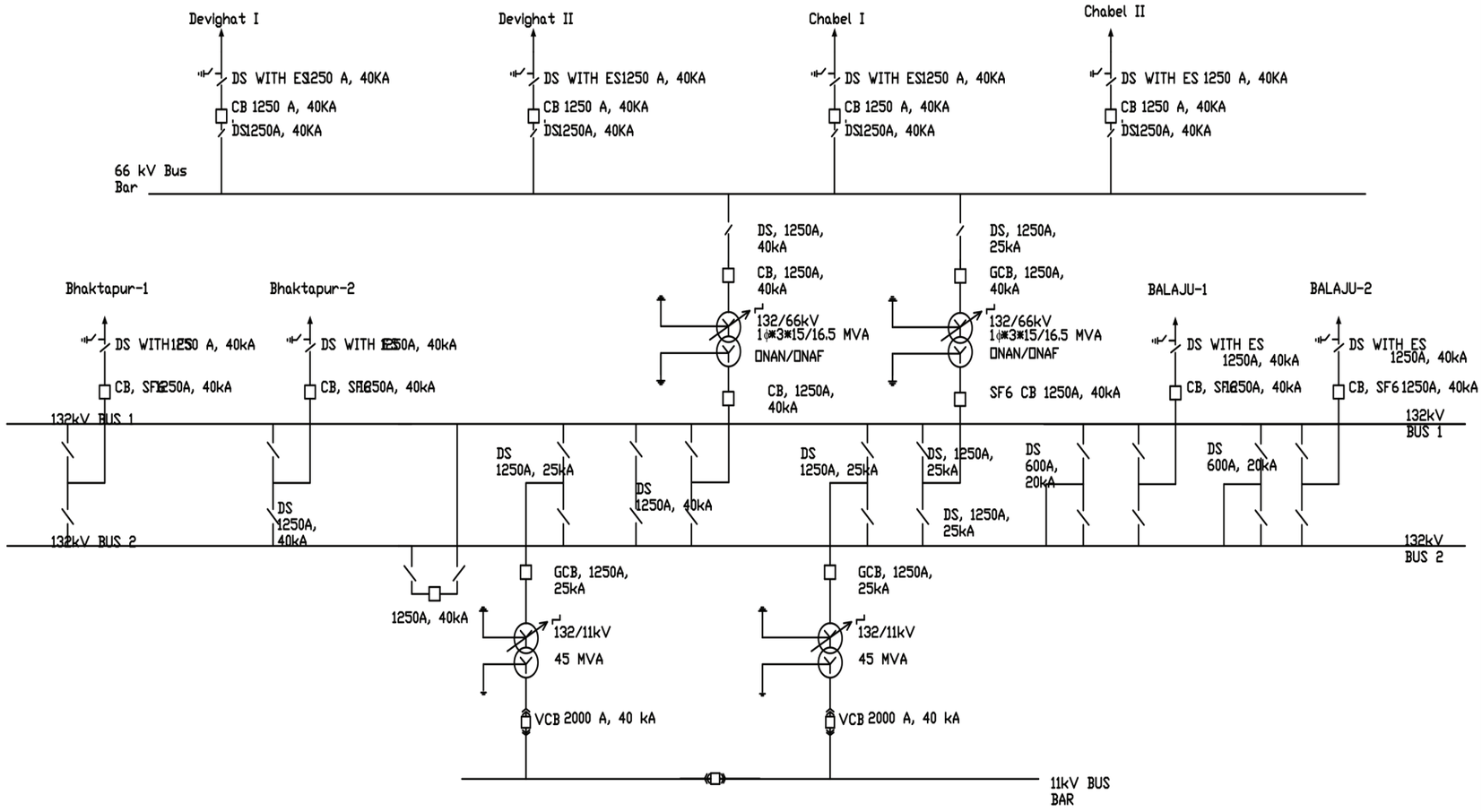


37. CHAPALI SUBSTATION

Chapali Substation having double bus system at 132 kV and single Bus System at 66kV voltage level located at Chapali , near Budanilkantha of Kathmandu district. This Substation was constructed with 132 kV double Busbar System to connect with Balaju and Bhaktapur. Two number of 66kV Bay for Devighat Circuit-I &II and two number of bays for 66 kVChabel-I and II circuit. It has 2 Set of 132/66 kV Singe Phase Transformer having Capacity of 3x15/16.5 MV. There is upgradation of one set of single phase 10 MVA Transformer with three phase 45 MVA in 2022 .

SUBSTATION CAPACITY 132/66kV: 99 MVA
PEAK LOAD 132/66kV: 92.59MVA

SUBSTATION CAPACITY 132/11kV: 90 MVA
PEAK LOAD 66/11kV: 32.46MVA

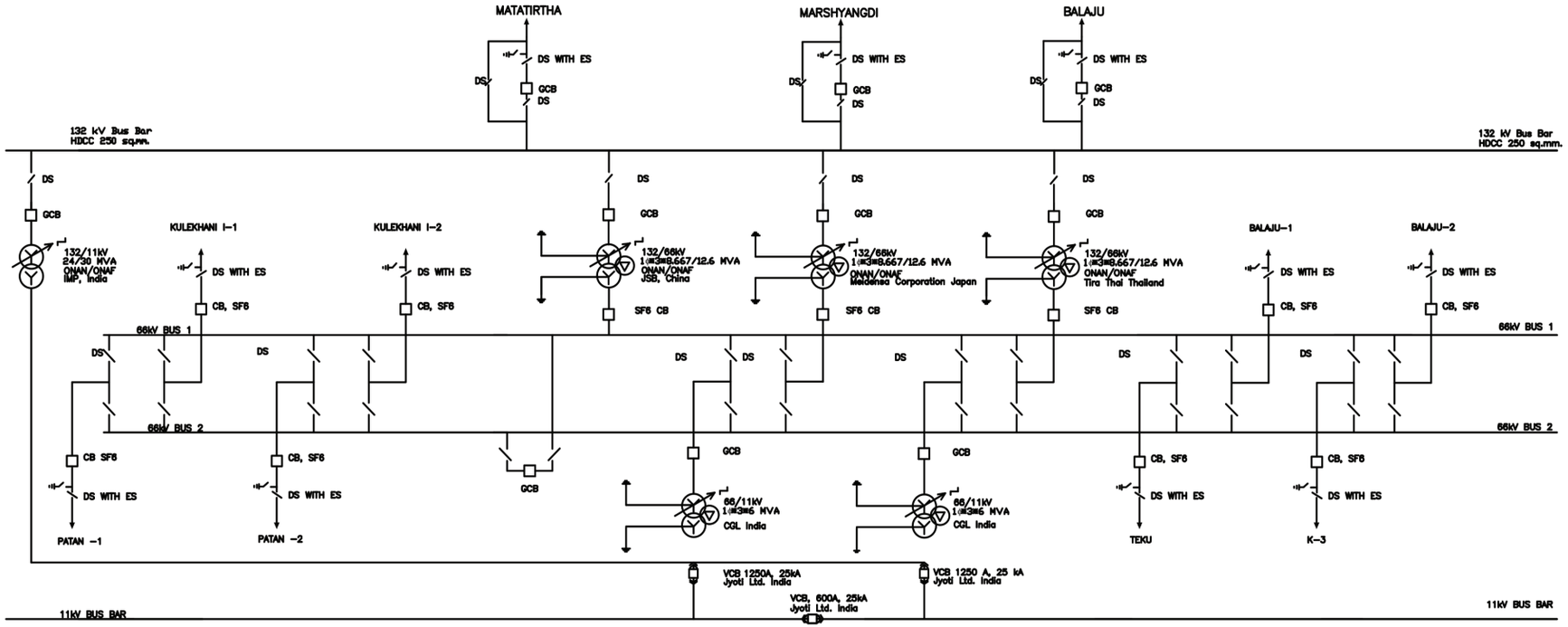


38. SIUCHATAR SUBSTATION

Siuchatar Substation having double bus system at 66kV and single Bus System at 132kV voltage level located at Siuchatar, near Kalanki of Kathmandu district feeds power to Teku, Kalimati, Kalanki, Swayambhu, Thankot, Balambu and Tahachal. This Substation was constructed with 66kV double Busbar System to connect with Balaju and Hetauda Substation in 1966. One number of 66kV Bay for Patan Circuit-I and two number of bays for 66/11kV Transformer with Capacity 3x6MVA were constructed with grant aid of Japanese Government . During construction of Kulekhani-II Power House, one 66kV bay for Kulekhani-II and one 66kV bay for Transformer with Capacity 3x8.667/12.6MVA was constructed in 1979 with Japanese grant. This substation was upgraded in 1984 with addition of three 132kV line bays (Kulekhani-II, Balaju and Marshyangdi) and one Transformer bay for 132/66kV, 3 x 12.6MVA Transformer. Similarly Kathmandu Valley Reinforcement Project had constructed 66kV Line Bays for Patan-II and Teku along with 132kV Bays in 1984. Interconnection of Siuchatar Substation with K3 Substion by 66kV Power Cable was completed in 2004 with grant aid of Japanese Government. Grid Substation Re-inforcement project has recently added one 132/66kV Transformer Bay with Capacity 3x8.667/12.6MVA to upgrade Transformation capability of the Substation in 2008. Office Complex of System Operation Department along with Load Dispatch Centre is located within this Substation area.A newf 132/66kV, 30MVA Transformer is installed in 2019. Now all 11 kV feeders feed via 132/11 kV Transformer, to reduce the overload in 66 kV Transmission lines.

SUBSTATION CAPACITY 132/66kV: 113.4MVA
PEAK LOAD 132/66kV: 103.11MVA

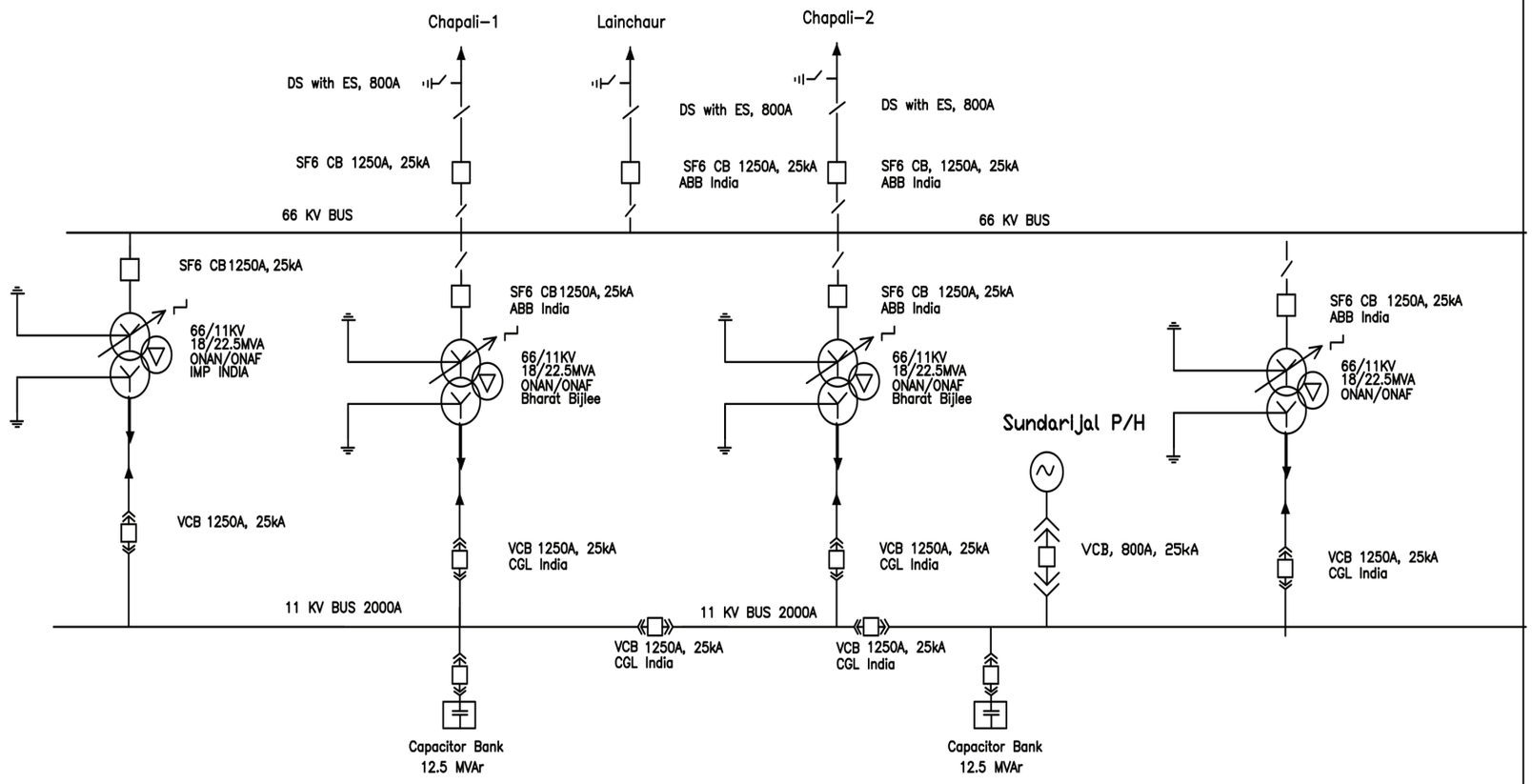
SUBSTATION CAPACITY 66/11kV: 36MVA
132/11 kV:30 MVA
PEAK LOAD 66/11kV: 27.43MVA, 132/11kV, 27.66 MVA



39. NEW CHABEL SUBSTATION

Chabel substation with Single Busbar System located at Chabel of Kathmandu district feeds power to Om Hospital, Sankhu, Maharajgunj Chabel, Mahankal and Sundarijal. This Substation was built in the year 1982 with three 66kV Transformer bays of 66/11kV, 6.3 MVA capacity and two 66kV line bays to evacuate power from Devighat Power Plant. Out of two circuits, one circuit was diverted to Bhaktapur and new 66kV line was constructed from Chabel to Bhaktapur in the Year 1995. Old 12kV OCB Swichgears were replaced with 12kV VCB Switchgears in FY 2001. With the increased load, three numbers of 66/11kV, 6.3MVA Power Transformers were replace by two numbers of 66/11kV, 22.5MVA capacity in the year 2003. Another 22.5MVA Transformer Bays were added in the year 2013 and 2023. Now, There are Four numbers of 66/11 kV 22.5MVA Power Transformers.

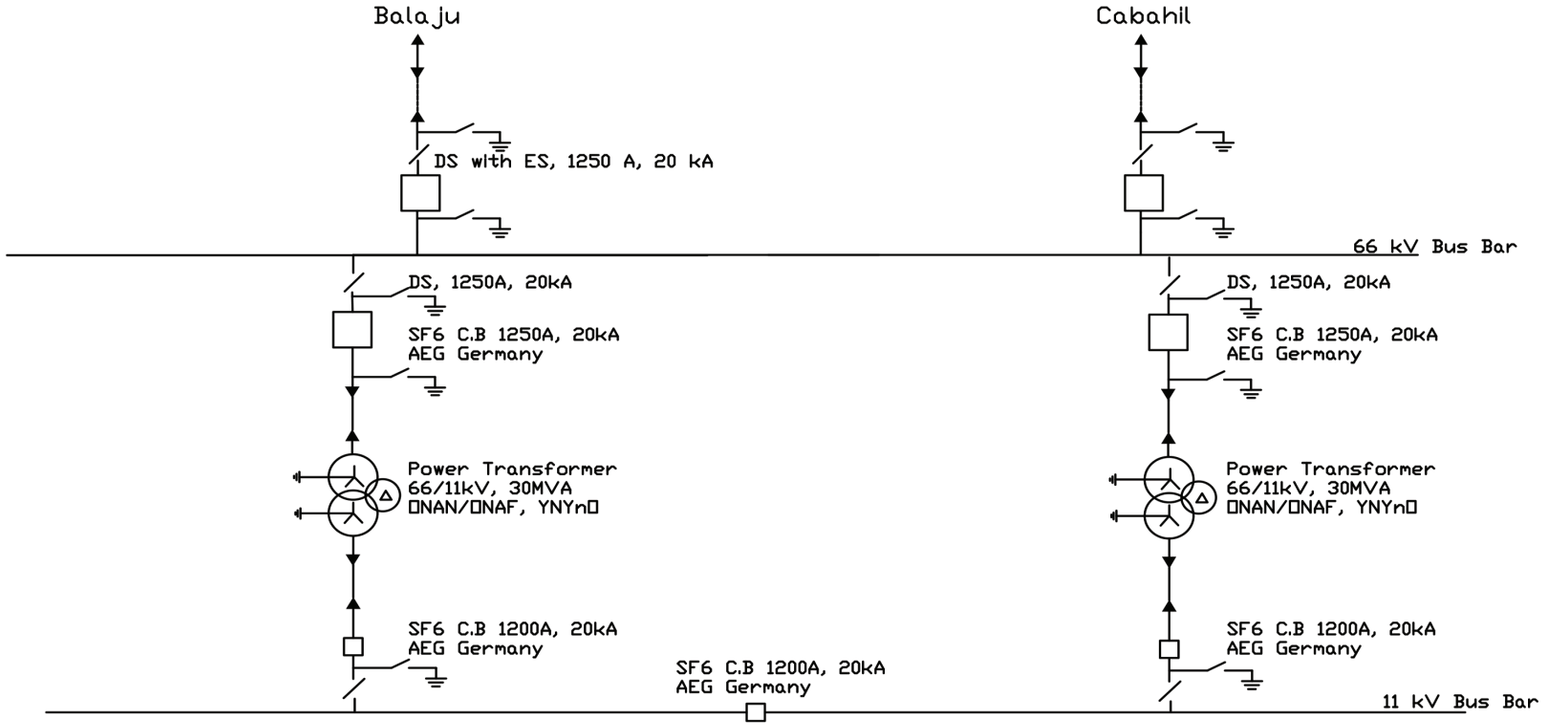
SUBSTATION CAPACITY:66/11kV, 90MVA
PEAK LOAD: 80.48MVA



40. LAINCHAUR SUBSTATION

Lainchaur Substation with Single Busbar Sytem located at Lainchaur, Kathmandu feeds power to Keshar Mahal, Samakhusi, Lazimpat, Gairidhara, Kingsway, Thamel, Royal Palace and K2 switching station. This GIS Substation was built in the year 1989 with two numbers of 66/11kV, 10MVA capacity with the grant aid of German Government. After an accident occured, indoor 12kV Vacuum type Switchgears were temporarily commissioned on July 1990 to supply the emergency loads. Ater 3 years of operation 12 kV VCB Switchgears were replaced with GIS system. In the year 1996, two numbers of 66/11kV, 10MVA Power Transformers were shifted to Bhaktapur Substation whereas two numbers of 66/11kV, 22.5MVA new Transformers were installed in Lainchaur Substation by Kathmandu Valley Reinforcement Project, NEA.

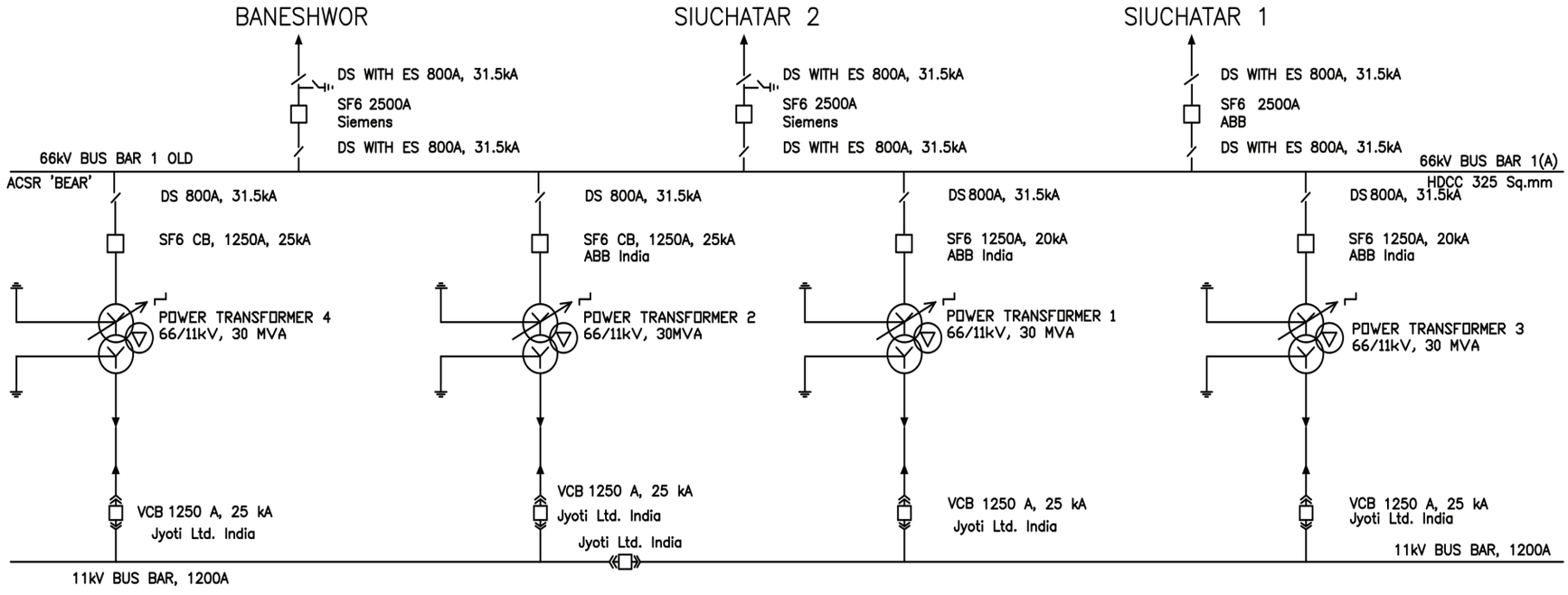
SUBSTATION CAPACITY: 66/11kV, 60MVA
PEAK LOAD :66/11kV: 41.38MVA



41. PATAN SUBSTATION

Patan Substation with Single Busbar System located near Patan Hospital at Lagankhel of Lalitpur district is connected through 11kV Ring Main with Thimi, K3, Teku and Old Patan Substations. When Kulekhani-I, 60MW Power Plant was under construction, 66kV single circuit Line (SIUCHATAR-1) and 66/11kV Transformer Bays with two numbers of Transformer capacity 3x6MVA were commissioned in the year 1979. Old 12kV BOCBs were replaced with 12kV VCB Switchgears with the grant aid of Japanese Government in the Year 1994. To upgrade the Power Transfer capacity in 66kV System, 66kV Line Bays for 66kV Baneshwor Line and 66kV Suichatar-II Line were added by Kathmandu Valley Reinforcement Project during the year 1997. New 66/11kV, 18MVA Transformer Bay was added in 2014. The substation was further upgraded with the 66/11kV, 22.5 MVA Bay, which was recently upgraded to 30MVA capacity.

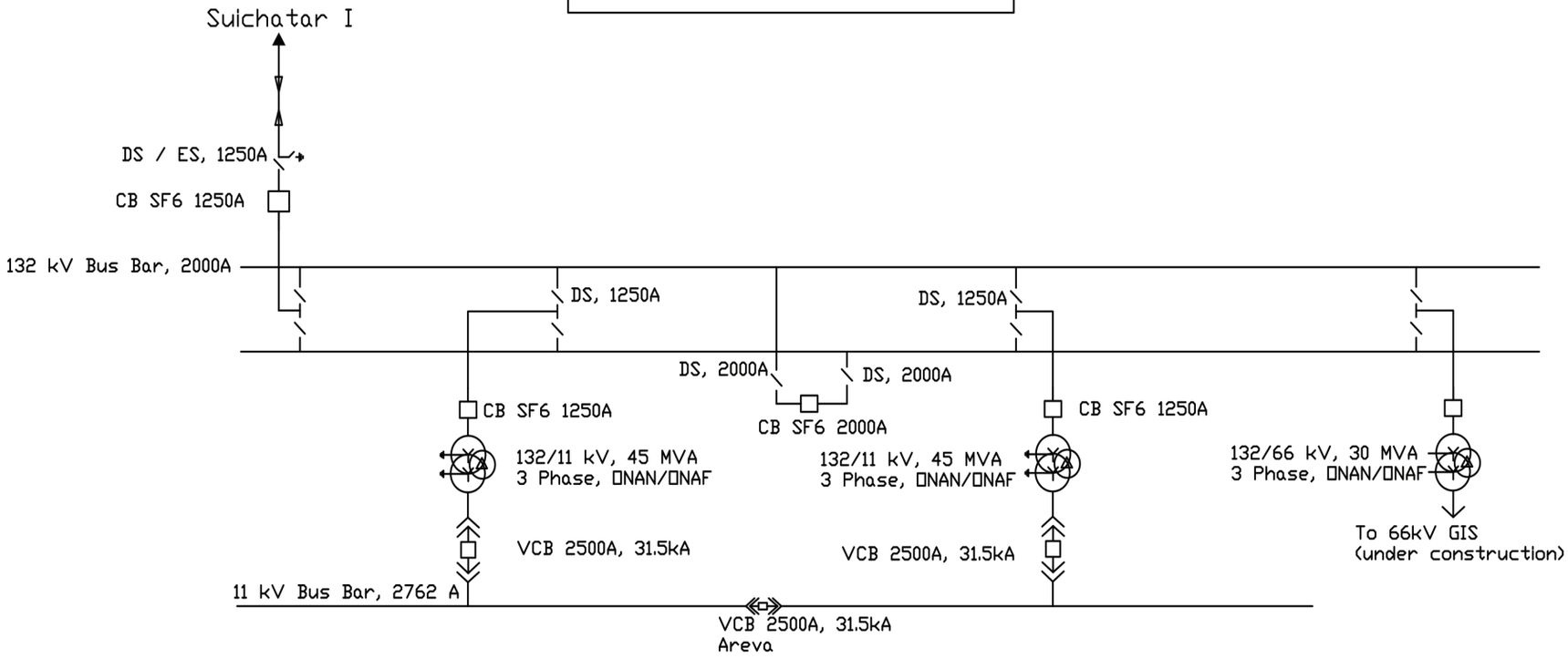
SUBSTATION CAPACITY: 120MVA
PEAK LOAD : 95.34MVA



42. TEKU SUBSTATION

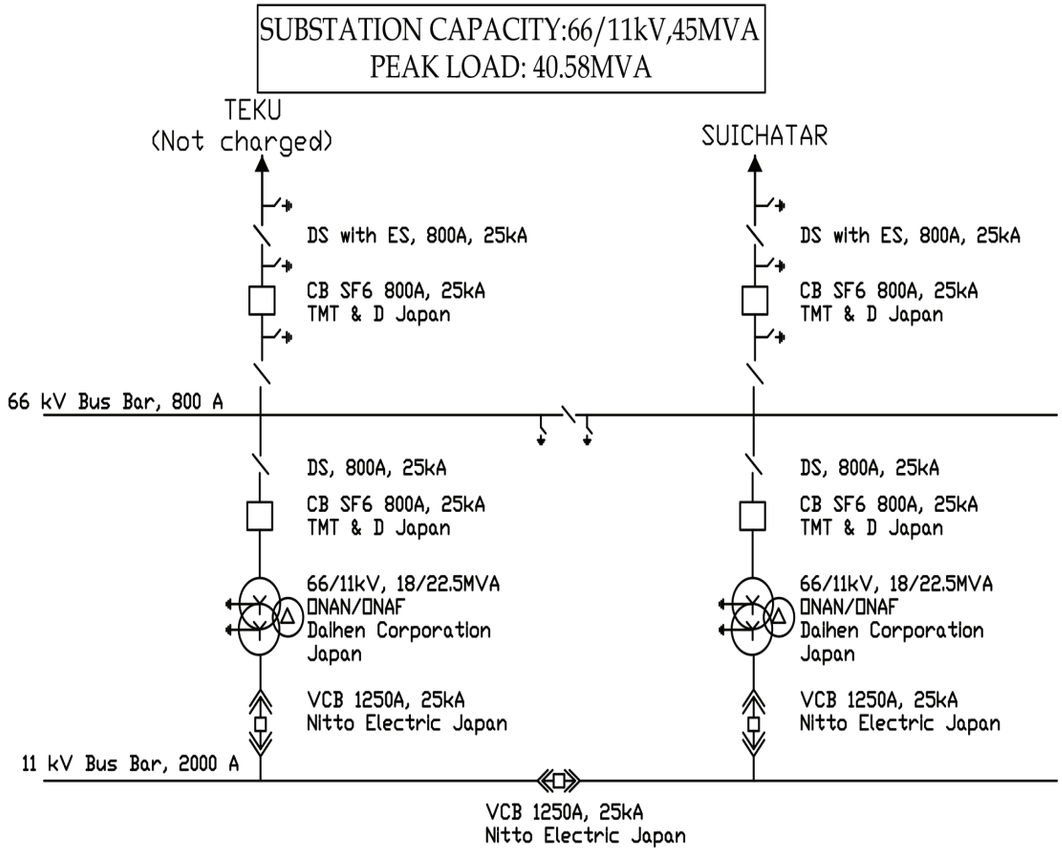
Teku Substation located with Single Bus System in Teku, Kathmandu feeds power to Sundhara, Pulchowk, Thankot, Kirtipur, Tripureshwor, Thapathali, Bhimsensthan, Tahachal, Kalimati. This GIS Substation was built by Kathmandu Valley Reinforcement Project in 1995 with two numbers of 66/11kV bays of 18/22.5MVA capacity. Now it is being upgraded by Project Management Department to 132kV Double Bus GIS System .

SUBSTATION CAPACITY: 90MVA
PEAK LOAD: 73.16MVA



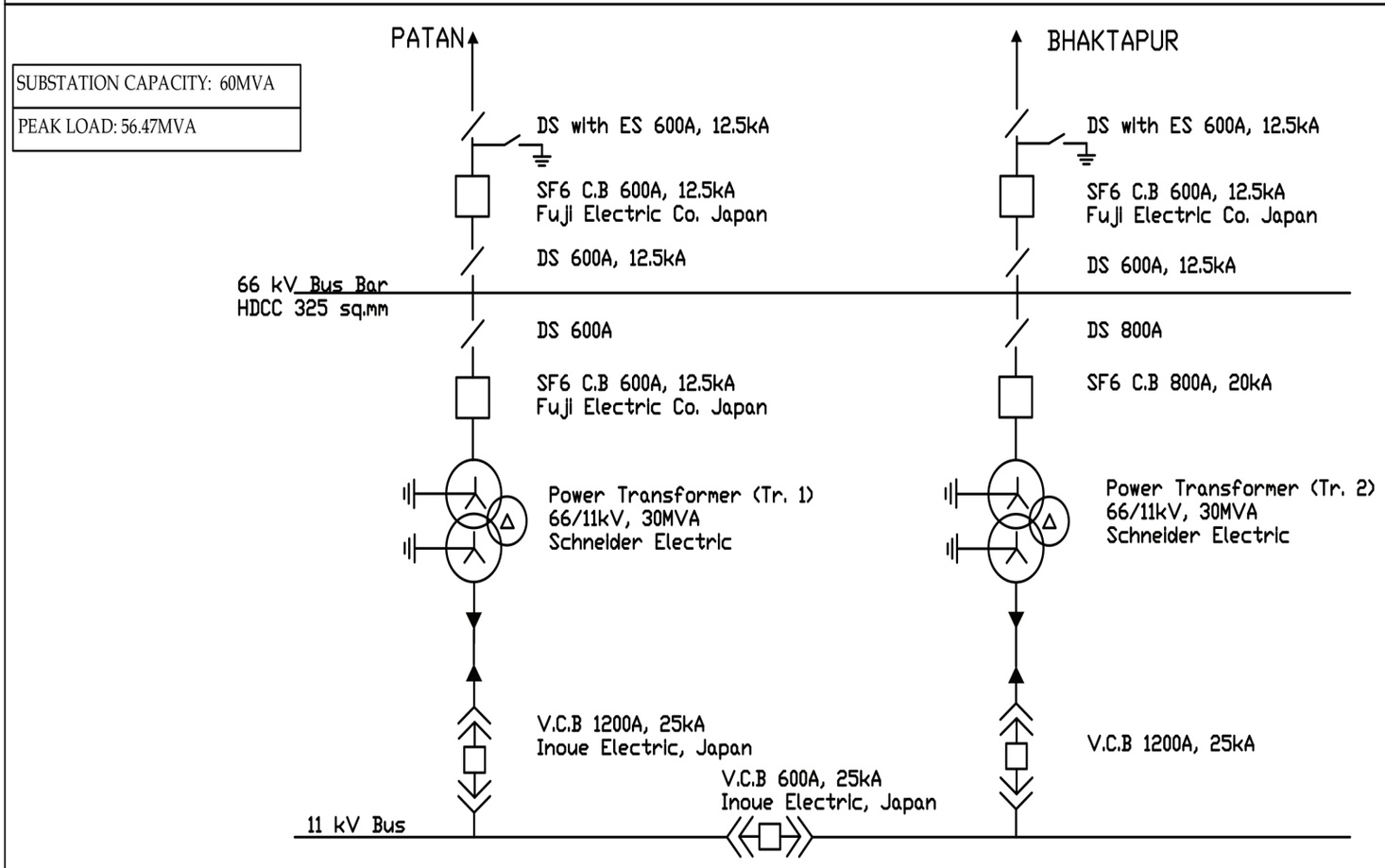
43. K-3 SUBSTATION

K3 substation with single Bus System located at Singhadurbar Area, Kathmandu feeds power to Bhrikutimandap, Putalisadak, Anamnagar, Singhadurbar, Kalikasthan and K2 switching Station. This GIS Substation was built in the year 2006 with two numbers of 66/11kV, 22.5MVA capacity, with the grant aid of Japanese Government. This 66/11kV Substation is interconnected with Teku Substation and Siuchatar Substation by 66kV under ground High Voltage Power Cable. Two numbers of 66/11kV, 22.5MVA Transformers under operation are sludgeless Transformers. Remote Control Panel with switching and metering facilities at 1st Floor for 15 numbers of 12kV VCB Switchgear Panels located at ground floor has been installed in year 2008.



44. BANESHWOR SUBSTATION

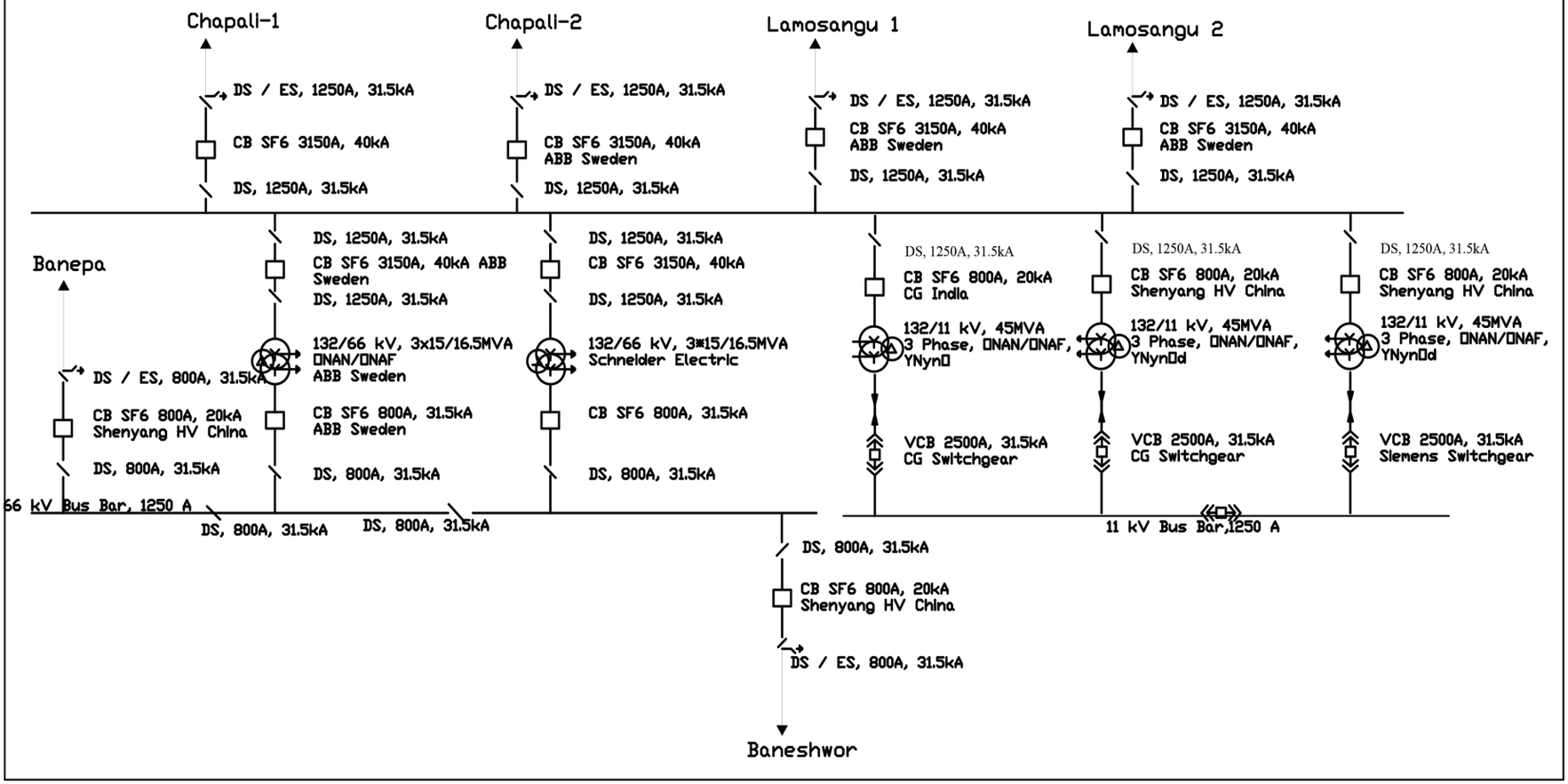
Baneshwor substation with Single Busbar System located at Min Bhawan of Kathmandu district, Bagmati zone feeds power to Gothatar, Sankhamul, IC Hall, Imadol, Lubhu, Airport, Baneshwor, Koteshwor, Bagmati and Dhobikhola. This substation is connected to Bhaktapur and Patan substation through 66kV Transmission line. This Substation was built in the year 1987 with the grant aid of Japan Government with single Bay of 66/11kV, three 6 MVA capacity. This substation was upgraded to two number of 66/11kV, 3 x 6MVA capacity with addition of new 66/11kV Transformer Bay by Kathmandu Valley Reinforcement Project with ADB Loan in the second phase, year 1996. 12kV Vacuum Switchgear Panels were installed in two tier System (one above other) due to limited space inside control Building. Office Building for Grid Operation Department and Kathmandu Grid Division is also located in this substation area. One of the 18MVA Transformer was upgraded to 30MVA in the year 2020.



45. BHAKTAPUR SUBSTATION

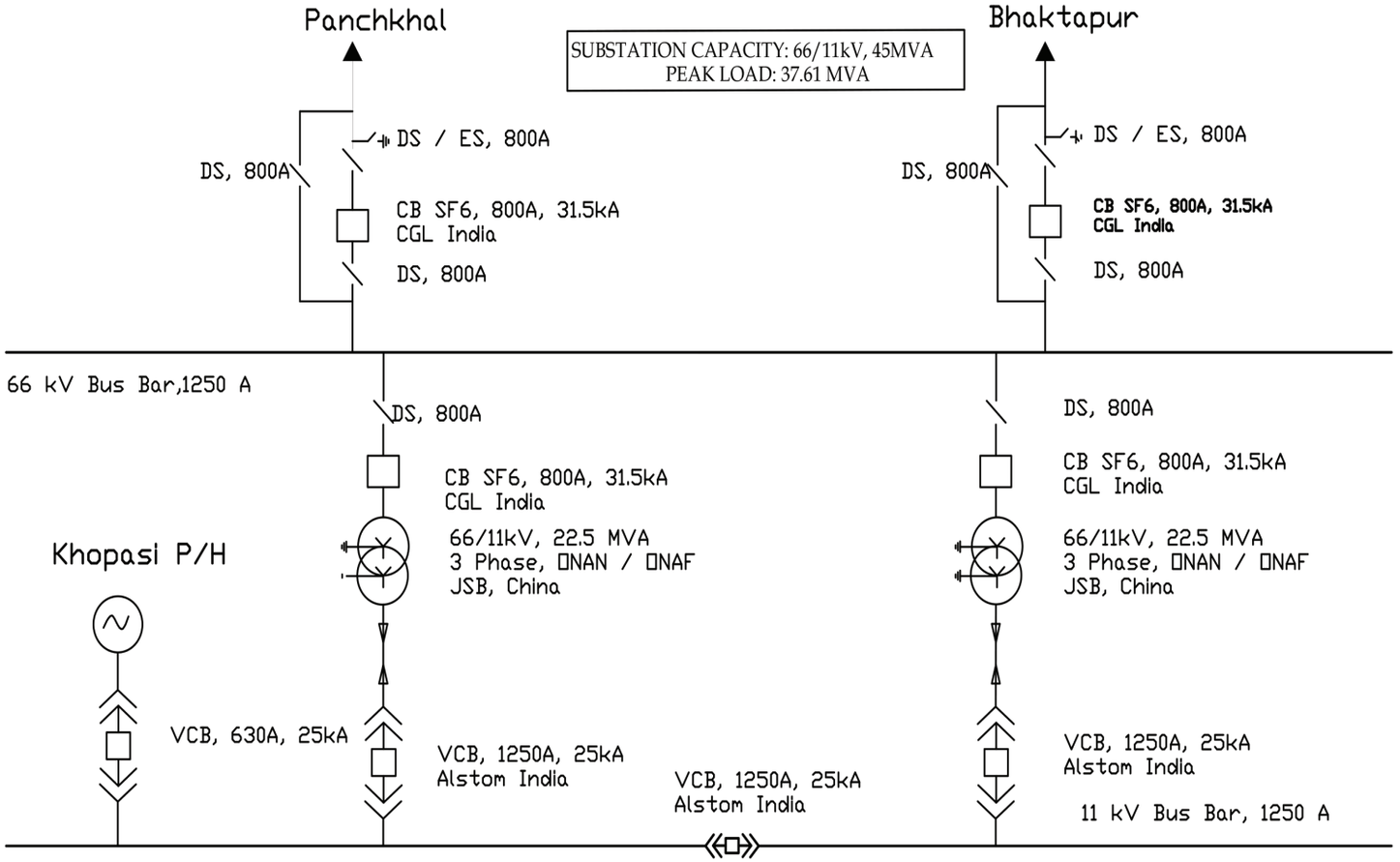
Bhaktapur Substation with Single Busbar System located near to Baktapur Industrial Area of Bhaktapur district, feeds power to Thimi, Nagarkot, Byasi, Katunje and Nalinchowk,Khopasi,BID,Bode,Brick. This Substation was constructed with 2 Transformer Bays in the year 1995 with 2 x 10 MVA Transformer shifted from Lainchaur Substation. To evacuate the Power from two IPPs (Khimti Hydro Power Project & Bhotekoshi Hydro Power Project), 132/66kV Substation with Capacity 3x15/16.5MVA was constructed in the year 1999 with the grant aid of Finnida. Now, There are Three number of 132/11kV Transformer Bays with total capacity 90MVA after upgrading one of 22.5MVA transformer to 45MVA transformer and two nos. of 132/66 kV of 3x15/16.5 MVA transformers .

SUBSTATION CAPACITY 132/66kV, 99MVA; 132/11kV,135 MVA
PEAK LOAD 132/66kV: 77.73MVA; 132/11kV: 105.4MVA



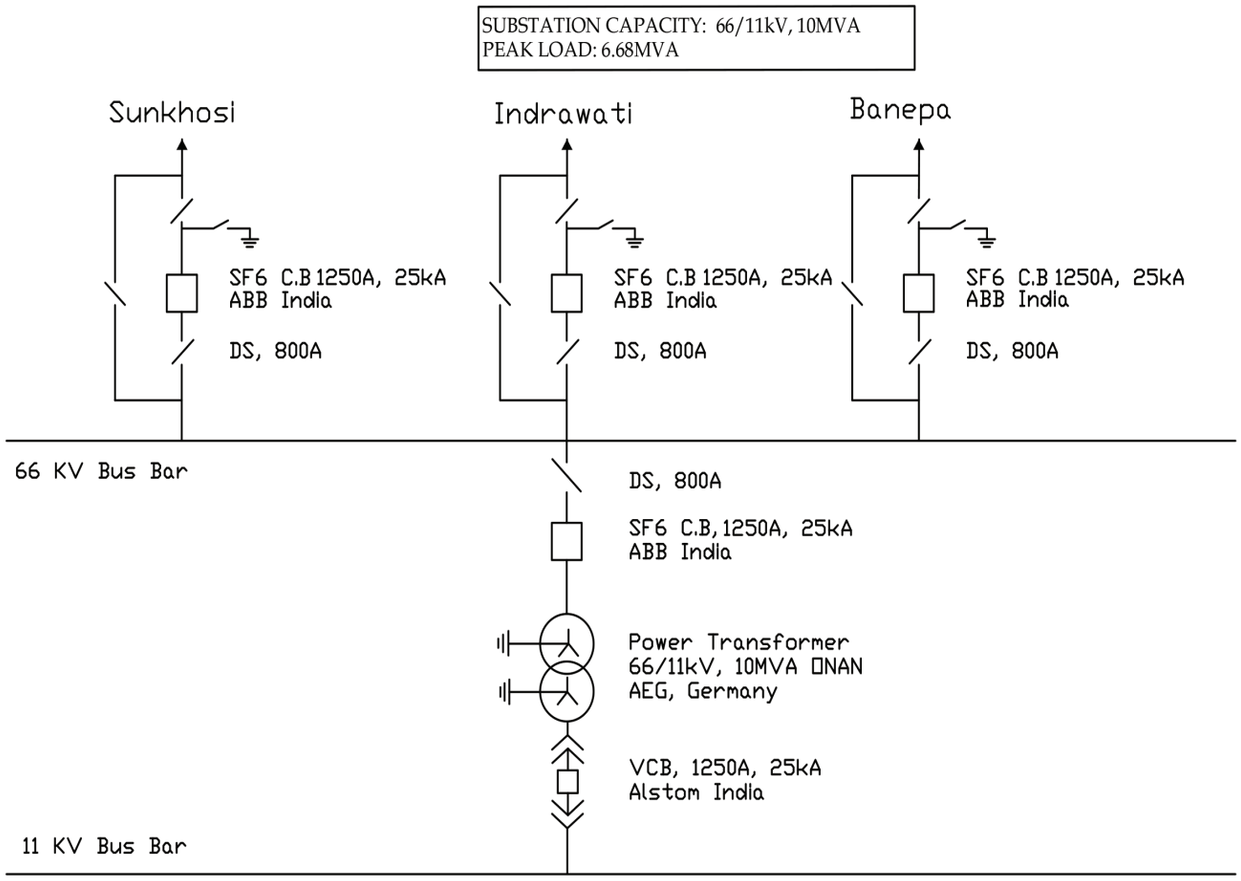
46. BANEPA SUBSTATION

Banepa Substation located at Bhurungkhel of Dhulikhel Municipality, Kavre feeds power to Banepa area, Panauti, Sanga, Khawa, Dhulikhel, and Nala. Initially Banepa area was fed from Bhaktapur-Khopasi 33kV Line and Nalinchowk 11kV Feeder originated from Bhaktapur Substation. To supply growing load of Banepa Area, new Substation was proposed at Banepa and was built in Year 2001 with 66/11kV, 10/12.5MVA capacity. Banepa Substation is also interconnected with Panauti Power House via 11kV Distribution line. 10MVA Transformer Bay was added in the year 2009. Further both the Transformers were upgraded to 2x22.5MVA in the year 2017. One of the 22.5MVA Transformer was later shifted to Balaju Substation.



47. PAANCHKHAL SUBSTATION

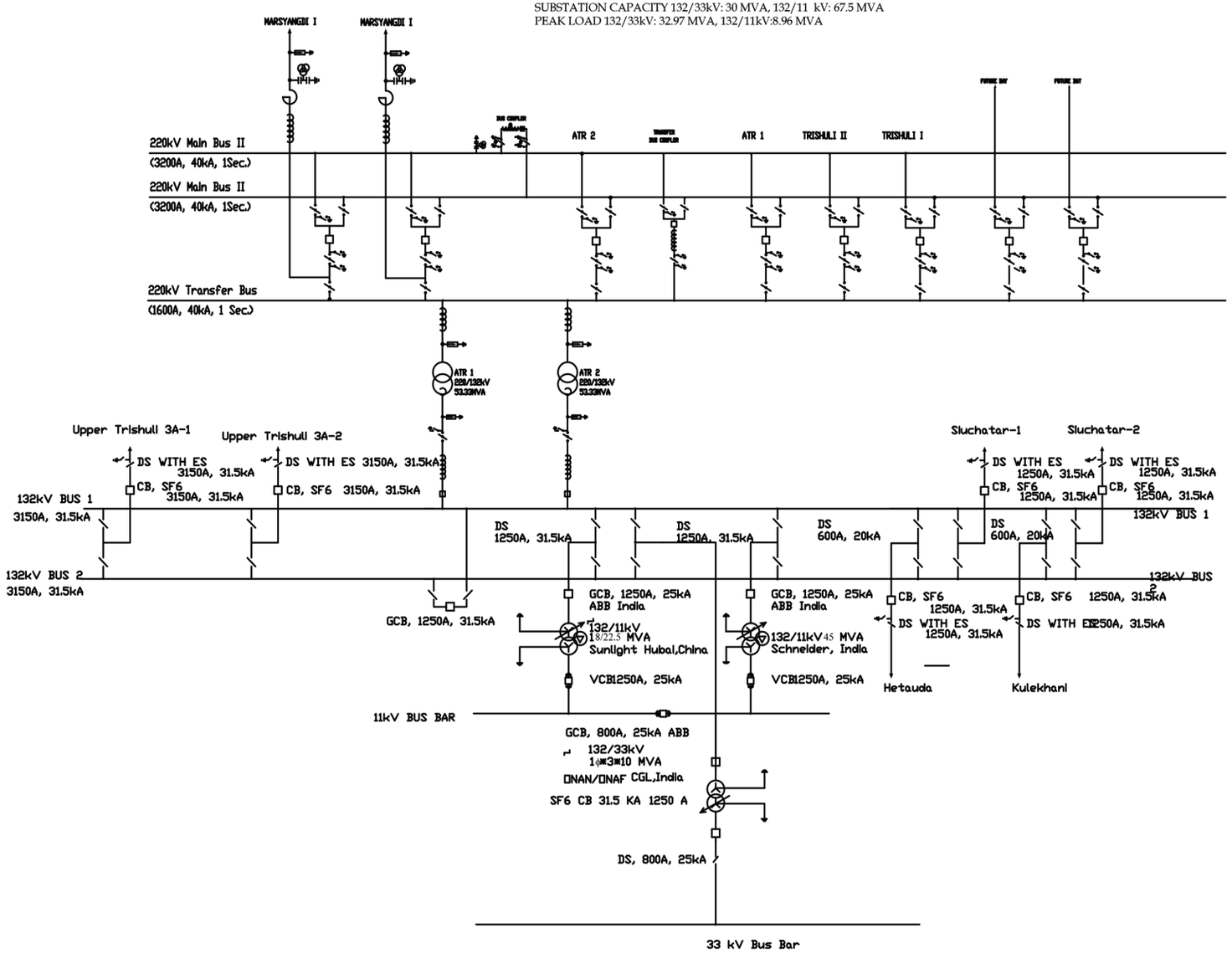
Paanchkhal Substation located at Paanchkhal of Kavre District feeds power to Melamchi, Tinpiple, Paanchkhal and Palanchowk. Panchkhal Substation was connected in T-Mode with 66kV Bhaktapur- Sunkoshi Line in 1972 and was supplying local power through 66/11kV, 1.5MVA Transformer. During construction of Banepa Substation, Paanchkhal Substation was upgraded to 5MVA Capacity with new 66kV Bay in π -Connection in the Year 2003. 66kV C&R Panels along with new 12kV VCB Panels were installed in new Control Building. After commissioning of Indrawati-III Power Plant, built by IPP (National Hydro Power Company), the plant was interconnected with Paanchkhal Substation. The existing 5MVA Transformer was replaced by 10MVA in the year 2011 June.



48. MATATIRTHA SUBSTATION

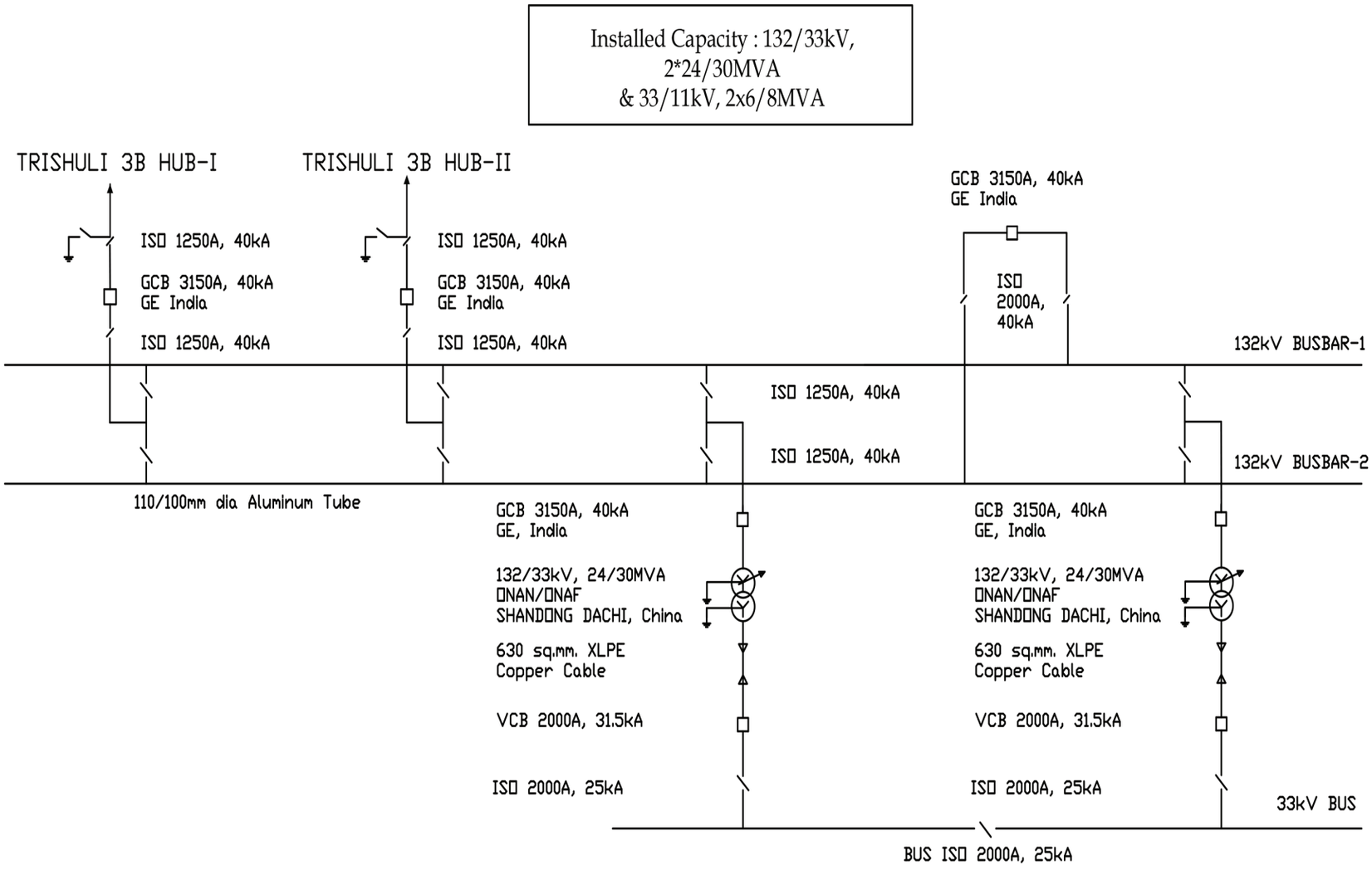
Matatritha Substation having double bus system at 132kV level located at Matatirtha, Western part of Kathmandu This Substation is connected with 132 kV double Busbar System to connect with Siuchatar with double circuit transmission line, Hetauda with Single Circuit Line, Kulekhani Powerhouse with single circuit line and upper Trushuli 3A power house with Double Circuit. Currently, there are two numbers of 132/11kV of Power Transformers one of 132/11 kV,22.5 MVA and another 132/11kV 45MVA and one no. of 132/33kV,3x10 MVA transformer. Recently, 220/132 kV, 320 MVA Auto Transformers have been charged in 2024.

SUBSTATION CAPACITY 220kV/132kV: 320 MVA
SUBSTATION CAPACITY 132/33kV: 30 MVA, 132/11 kV: 67.5 MVA
PEAK LOAD 132/33kV: 32.97 MVA, 132/11kV:8.96 MVA



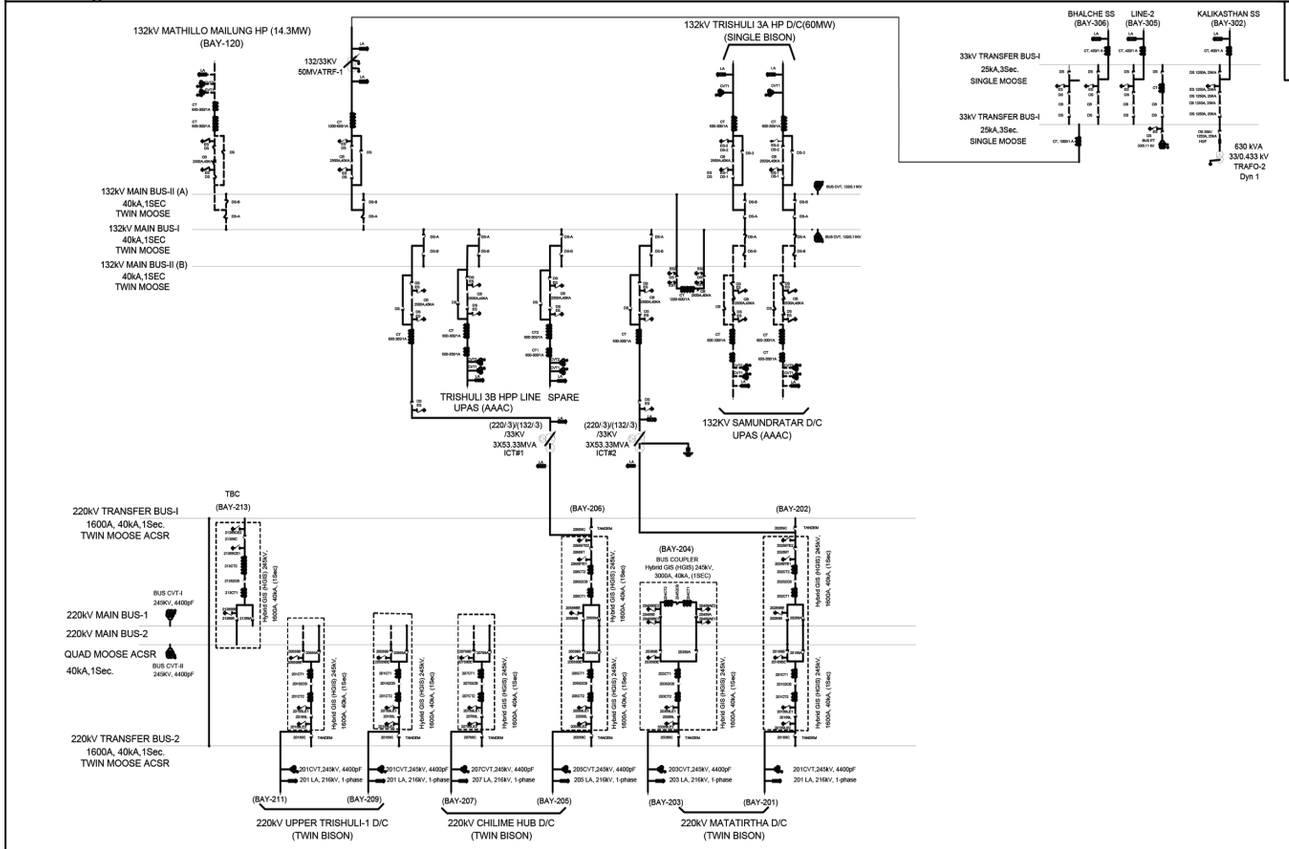
49. SAMUNDRATAR 132/33/11 kV SUBSTATION

Samundratar Substation with Double Bus System located at Dupcheswor RM-6, Samundratar evacuates POWER from more than 10 hydropower projects located at Tadi river corridor and being developed by IPPS by 26km long 132kV double circuit transmission line to Trishuli 3B Hub Substation. 220/132kV Trishuli 3B Hub Substation is to be linked to Matatirtha Substation (presently Matatirtha-Upper Trishuli 220kV Transmission Line is charged at 132kV level. This substation also feeds power to eastern part of Nuwakot with 3 different 11kV feeders and 2 spare switchgears are provided for future connections.



50. TRISHULI 3B HUB 220 (HYBRID)/132/33 KV SUBSTATION

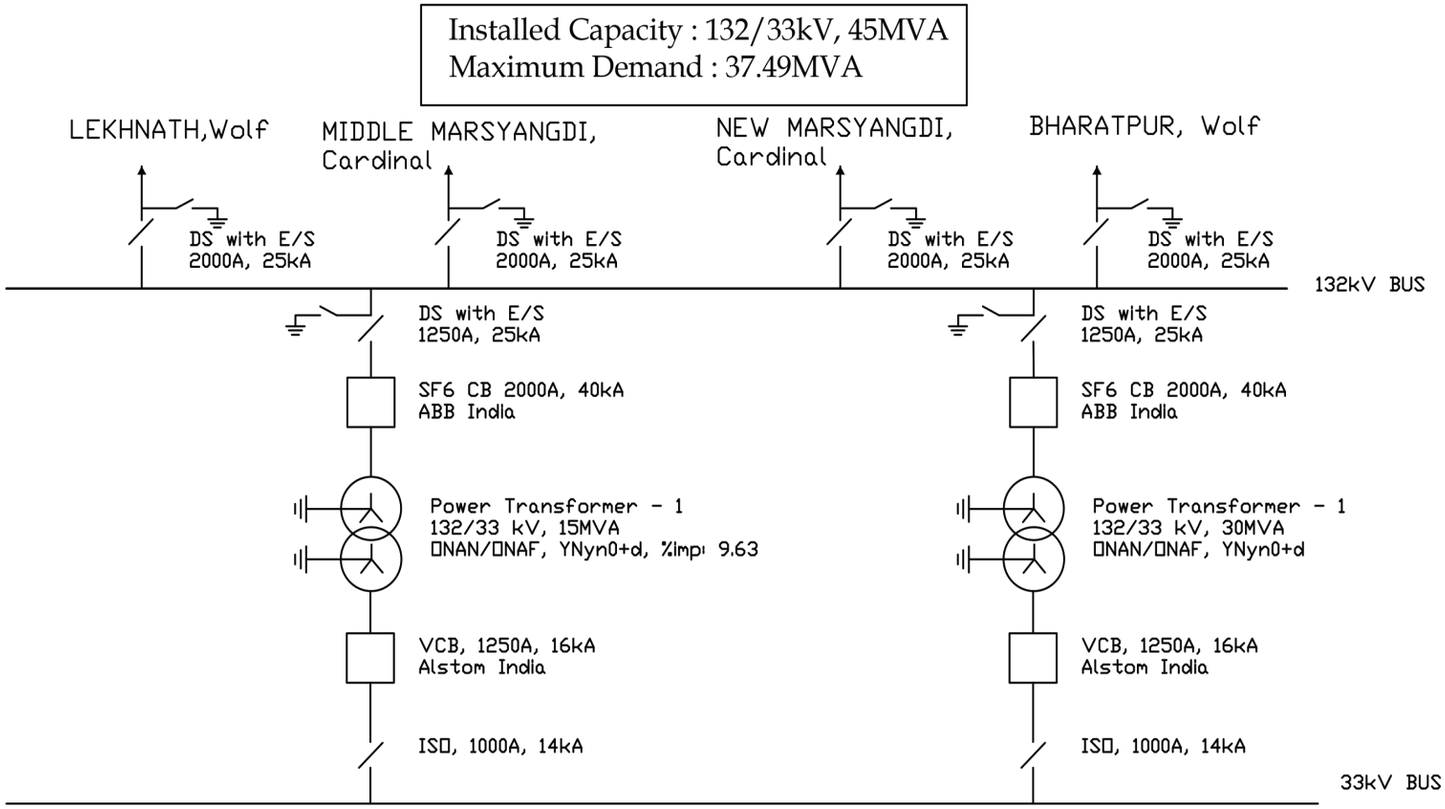
220 (Hybrid)/132/33kV Trishuli 3B Hub substation with Double Main & Transfer (DMT) for GIS Hybrid Switchgear System in 220kV, Double Main and Bypass Breaker system in 132kV, and Single Main & Transfer (SMT) System in 33 KV located at Kispang-5, Pairebeshi of Nuwakot district of Bagmati Province is connected to Matatirtha 220kV Substation, Kathmandu. This substation receives power from Chilime 220kV Substation Rasuwa and Upper Trishuli-1 216 MW Hydropower (Under_construction Project) via 220kV Double/Multi Circuit Transmission Line, Upper Trishuli 3A Hydropower (60MW) & Mathillo Mailung Hydropower (14.3MW) via 132 kV lines,Upper Trishuli 3B HP (37MW), and Samundratar 132kV Substation which receives the power from Hydopowers along Tadi river corridor. This substation was commissioned in 2024AD with Seven (6+1) 220/132kV/33kV single phase transformer to form two banks each of 160MVA and one number of 132/33kV, 50MVA transformer. This substation is connected to Kalikasthan 33kV Substation, Rasuwa and Bhalche 33kV Substation, Nuwakot for Neighborhood electrification.



Installed Capacity : 220/132, 320MVA & 132/33kV, 50 MVA

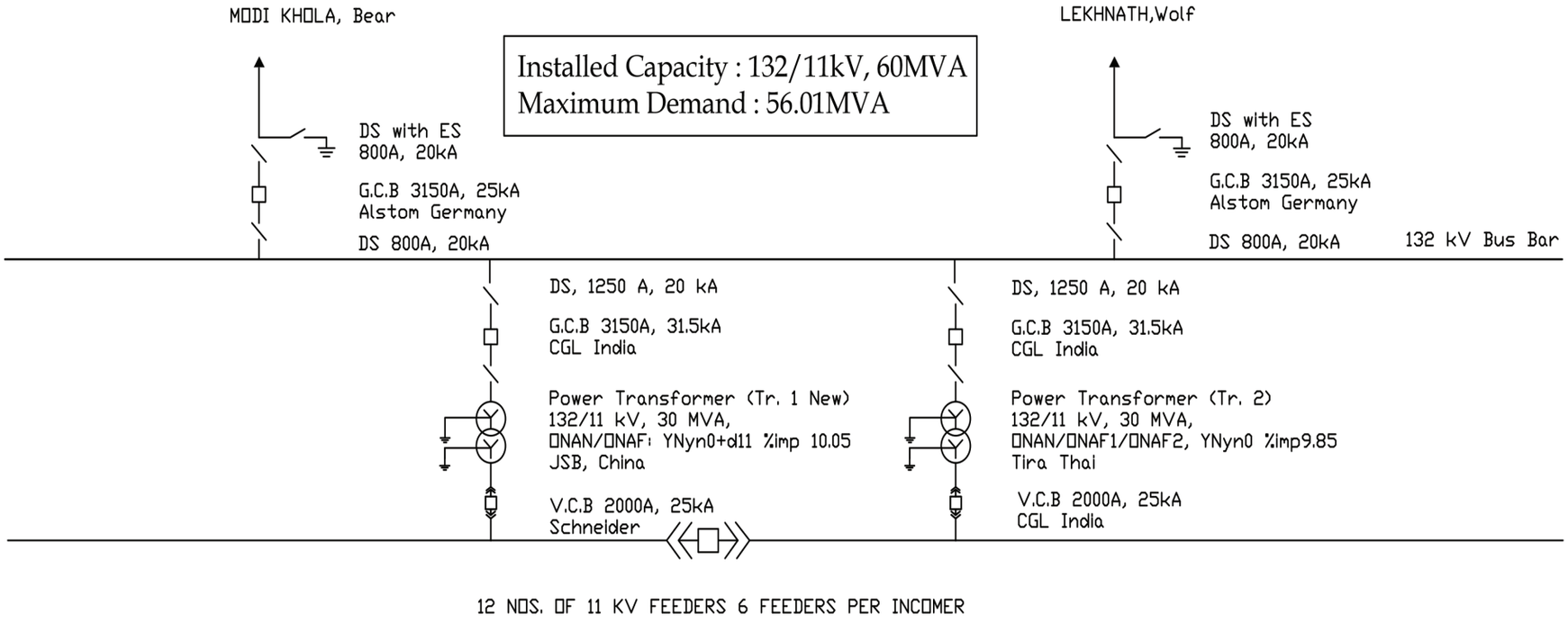
51. DAMAULI SUBSTATION

This substation with Single Bus System located at Damauli Municipality in Tanahun district, Gandaki zone feeds power to Aabu Khaireni, Gorkha, Kurintar, Lamjung, Tharpu and Damauli. Damauli Substation is connected by Disconnecting Switches with Lekhnath and Bharatpur Substations through 132kV Single Circuit Lines. This Substation was commissioned in 1983 with 132/33kV, 5MVA capacity. Later on the Transformer was upgraded to 20MVA Transformer in 2000. In 2012 3MVA, 33/11 KV was replaced by 16.6MVA Transformer. Existing 132/ 33 kV 30 MVA Transformer is replaced by 15 MVA Transformer another 132/ 33 kV 30 MVA has been installed in 2023.



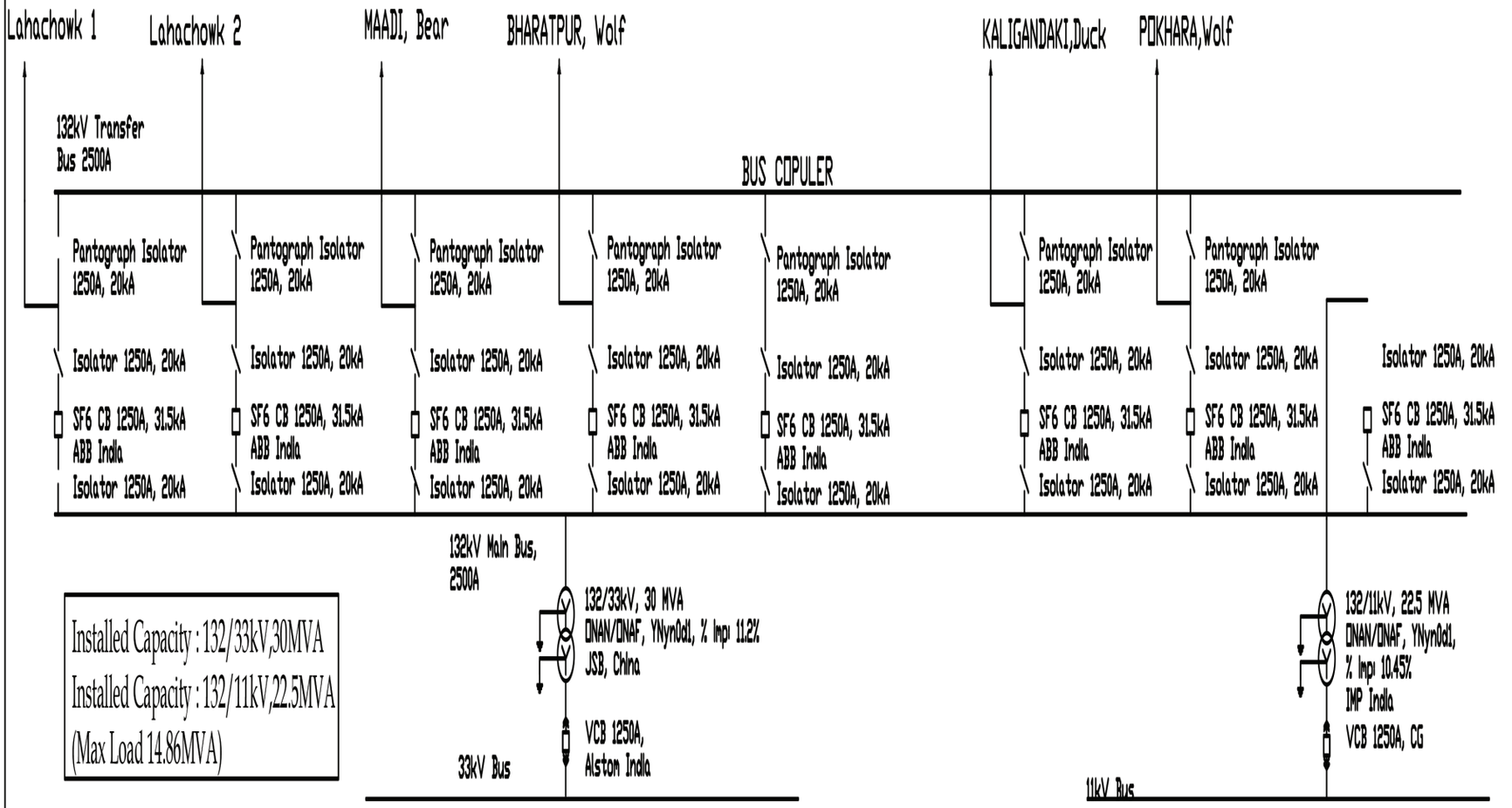
52. POKHARA SUBSTATION

Pokhara Substation with Single busbar system located at Pokhara Sub-Metropolitan city of Kaski district, Gandaki zone feeds power to Hemja, Armala, PID, Pokhara City, Fewa, Arwa, Sarangkot and Baidam. Pokhara Substation is fed by Modi Power House through 132kV Single Circuit Line. Pokhara Substation is also fed through 11kV by Fewa Hydro and Seti Hydro. Pokhara Substation is also connected with Lekhnath Substation through 132kV Single Circuit Line. This Substation was commissioned in 1980 with 132/11kV, 6MVA capacity. The substation was upgraded to 13.5MVA capacity with the addition of 7.5MVA Transformer by the Fifth Power project in 1989. In 2002 the existing 6MVA Transformer was replaced by 15MVA. In 2008 a new Transformer bay with 30MVA Transformer was constructed and the existing 7.5MVA Transformer was decommissioned by the substation reinforcement project.In 2014 15MVA transformer was replace by 30 MVA Transformer.



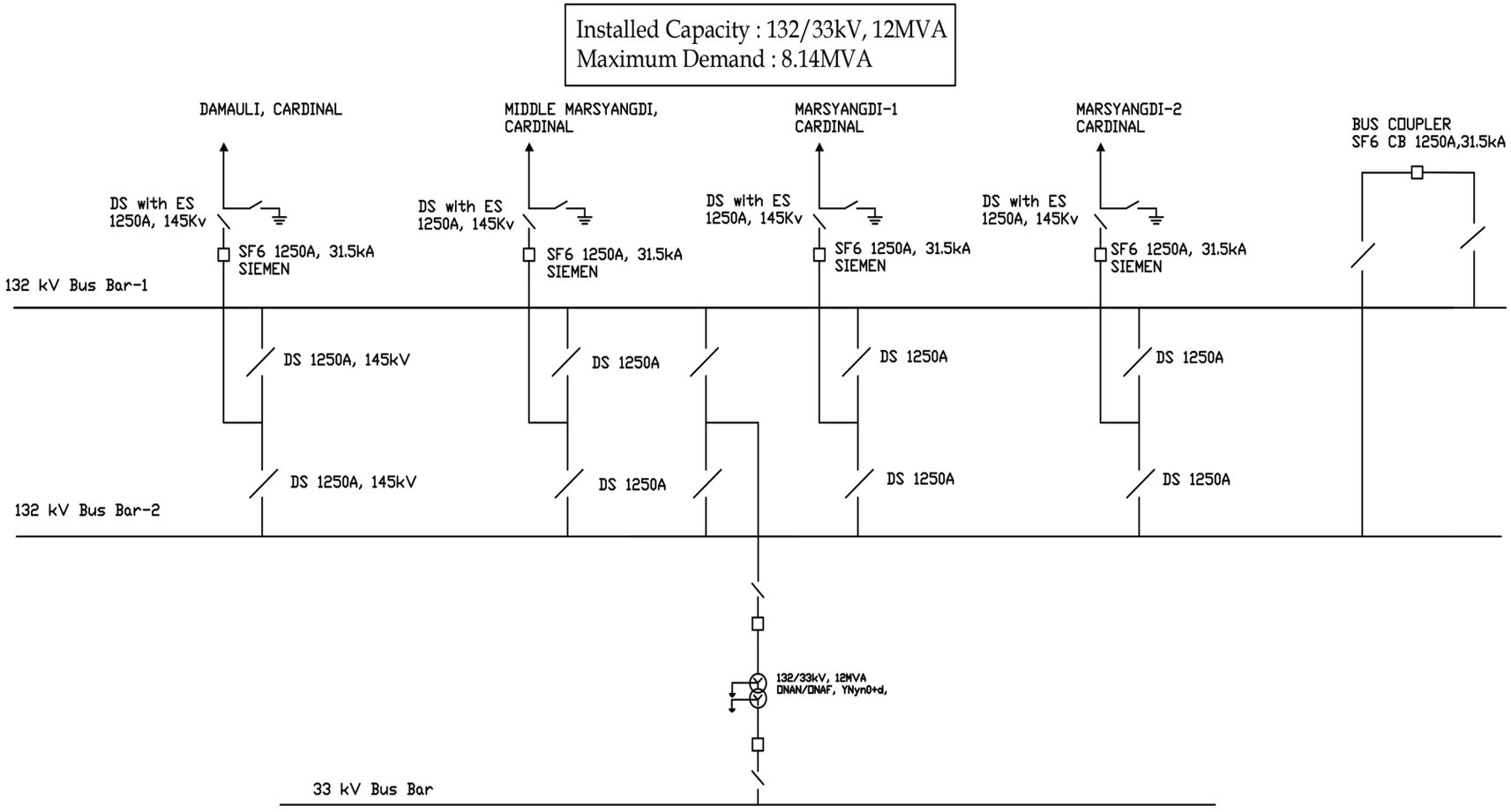
53. LEKHNATH SUBSTATION

Lekhnath Substation with Main and Transfer Bus System located at Lekhnath Municipality of Kaski district, Gandaki zone feeds power to Budibazar, Bijaypur, Begnash and Khaireni. Lekhnath Substation is fed by Kaligandaki Power House through 132kV SIngle Circuit Line. This Substation is connected with Pokhara and Damauli Substations through 132kV Lines. This Substation was commissioned in 2002 with 132/11kV, 22.5MVA capacity.



54. NEW MARSYANGDI (MARKICHOW) SUBSTATION

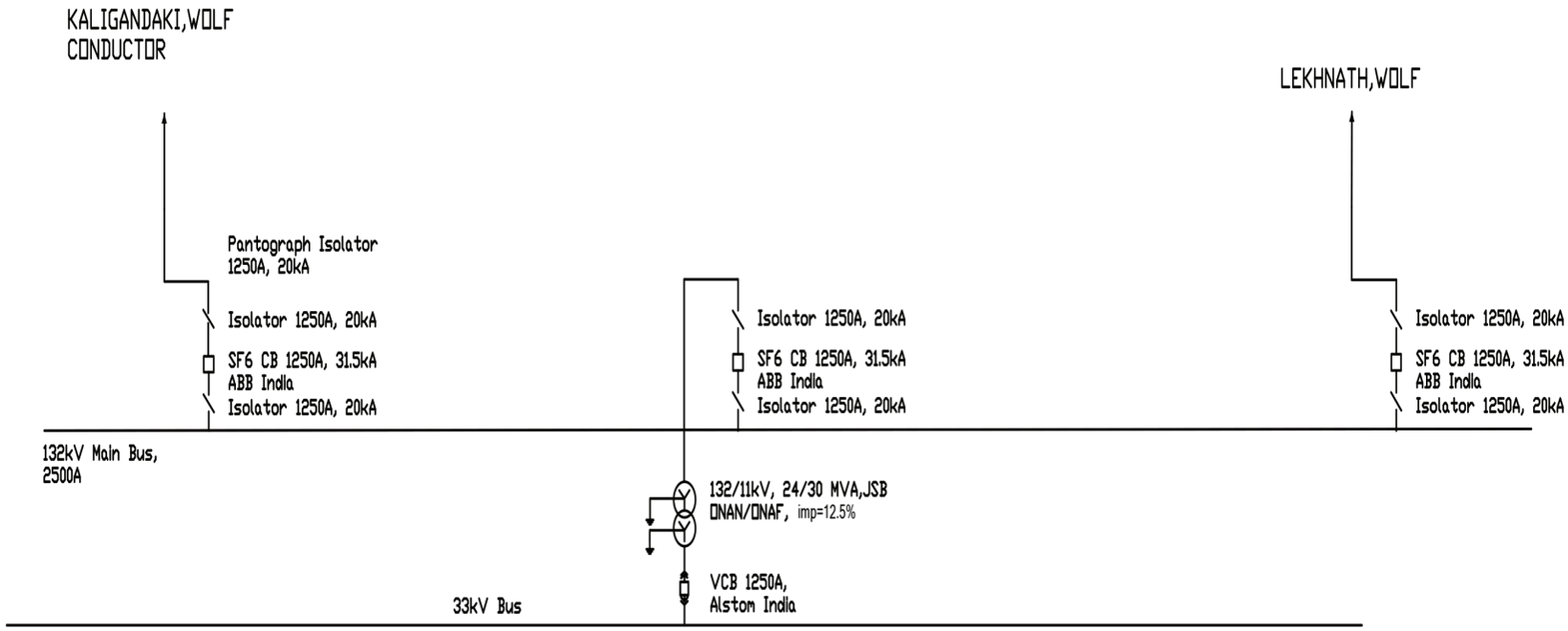
New Marsyangdi substation is a double bus bar system. This Substation is located at Markichowk of Tanahu district of Gandaki zone feeds power to Anbookhaireni(TANAHU) and Gorkha DISTRICT. The availabilty of 132 kV at this SS is used for stepping up to 220 kV for Marsyangdi-Kathmandu 220 kV TLP . This substaion is connected to Damauli SS Middle MarsyangdiHEP and Lower Marsyangdi HEP. At this SS double ckt gets loop in from damauli and middle HEP and double ckt gets loop out to lower marsyangdi HEP. There are 4 bays of 132 kV , 1 bay of 132 kV buscoupler , 1 bay of 132 kV of transforer bay and 2 bays of 33 kV bays for distribution. 132/33 kV, 30 mVA Capacity power transformer has been installed. The whole work was completed,tested ,commissioned and charged on fy 2075/76 DATED: 2075.12.21 B.S.



55. SYANGJA SUBSTATION

Syangja Substation with Single Bus System located at Rangkhola of Syangja district, Gandaki zone feeds power to Badkhola and Galyan area. Syangja Substation is fed by Kaligandaki Power House and Lekhnath Substation through 132kV Single Circuit Lines. The Substation was commissioned in 2013 with 132/33kV, 30MVA and 33/11kV, 8MVA Capacities.

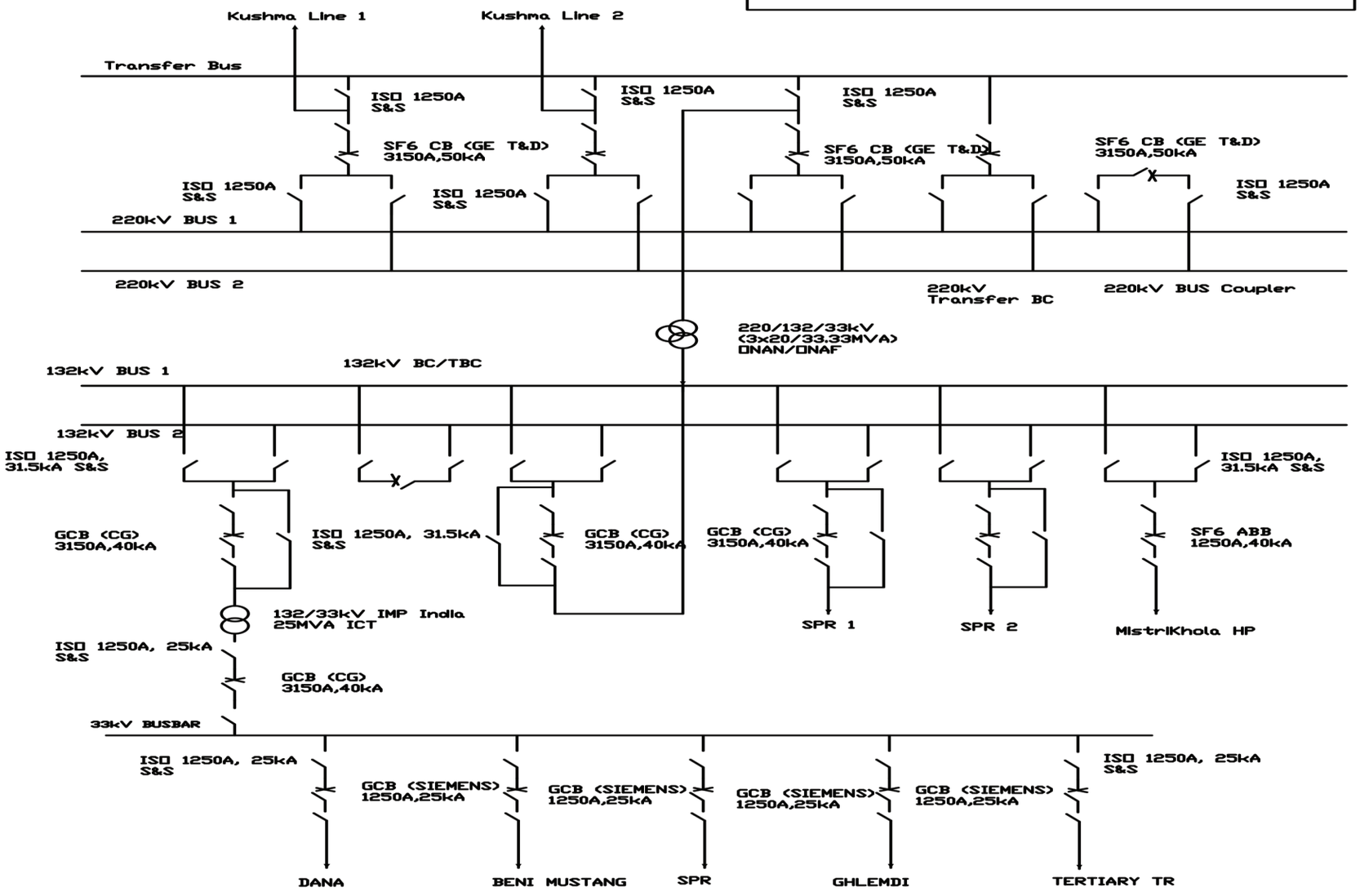
Installed Capacity : 132/33kV, 30MVA
Maximum Demand: 11.95 MVA



56. DANA SUBSTATION

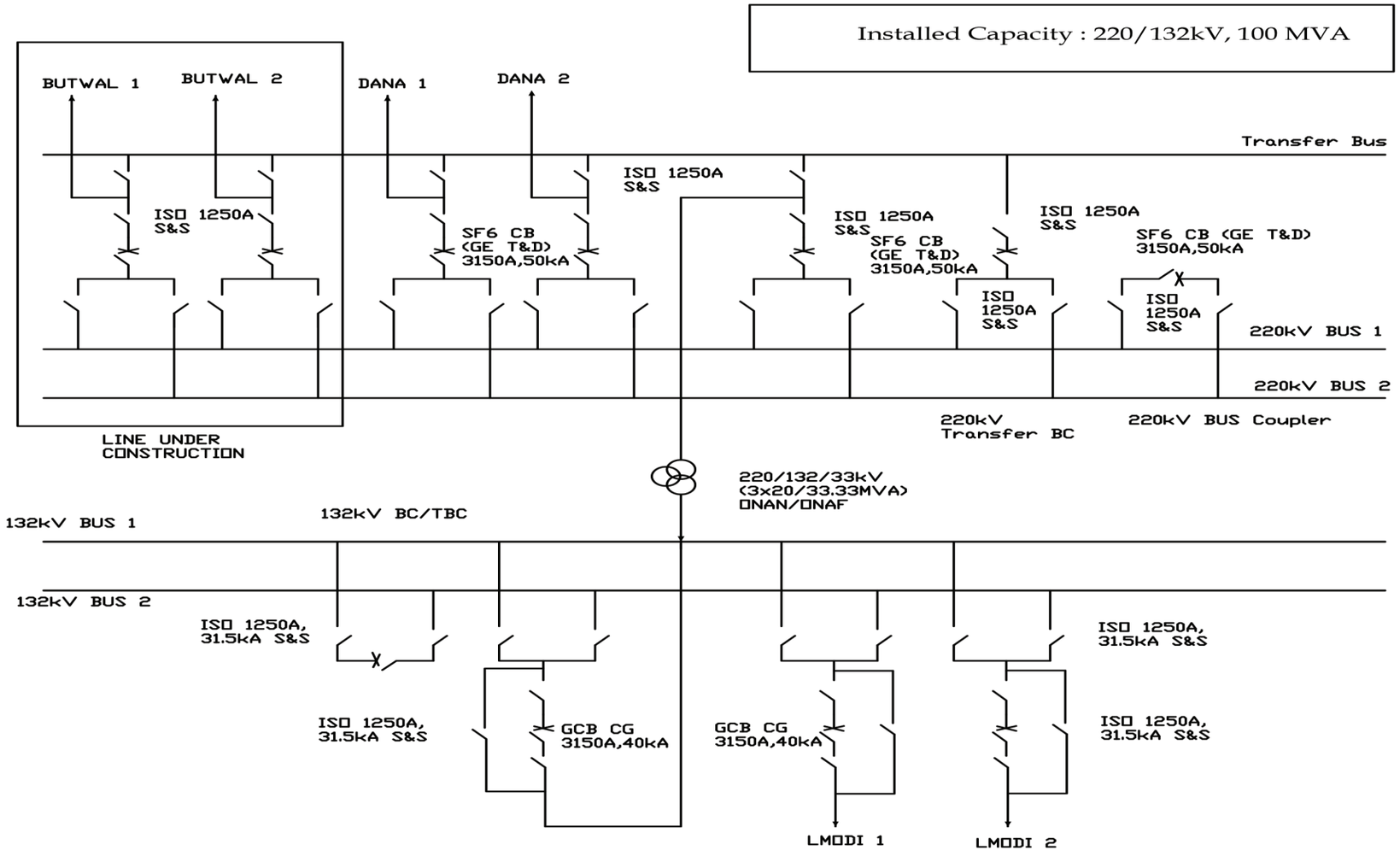
Dana substation with Double Bus with a transfer system, located at Dana of Myagdi district of Dhaulagiri Zone receives power from Mistrikhola HP, Ghalemdi & Thapa Khola. It is connected to Kushma substation by 220kV double circuit line. This substation was commissioned in 2020.

Installed Capacity : 220/132/33kV, 100 MVA



57. KUSHMA SUBSTATION

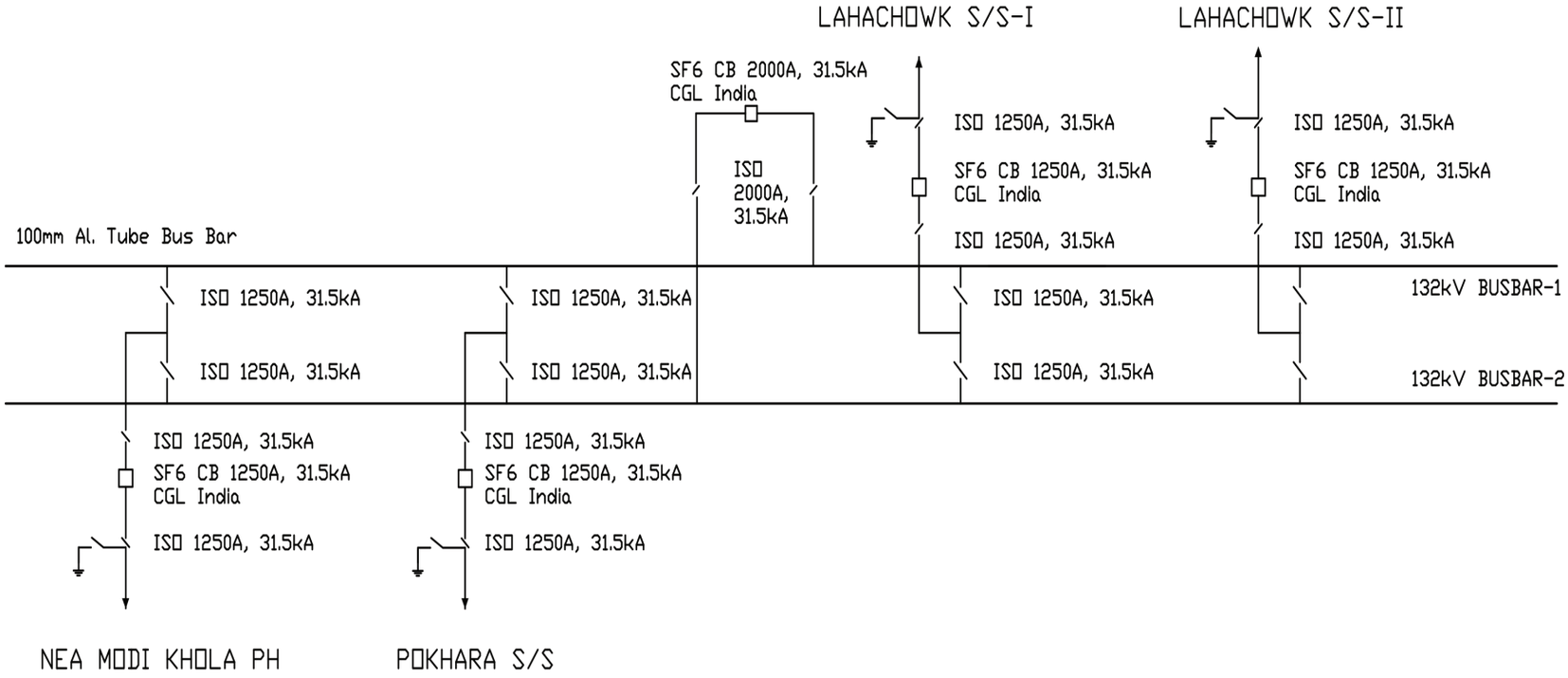
Kushma substation with Double Bus with a transfer system, located at Dana of Parbat district of Dhaulagiri Zone It is connected to Dana substation by 220kV double circuit line and by 132kV single circuit, it is connected to Lower Modi HP. This substation was commissioned in 2020.



58. NEW MODI SUBSTATION

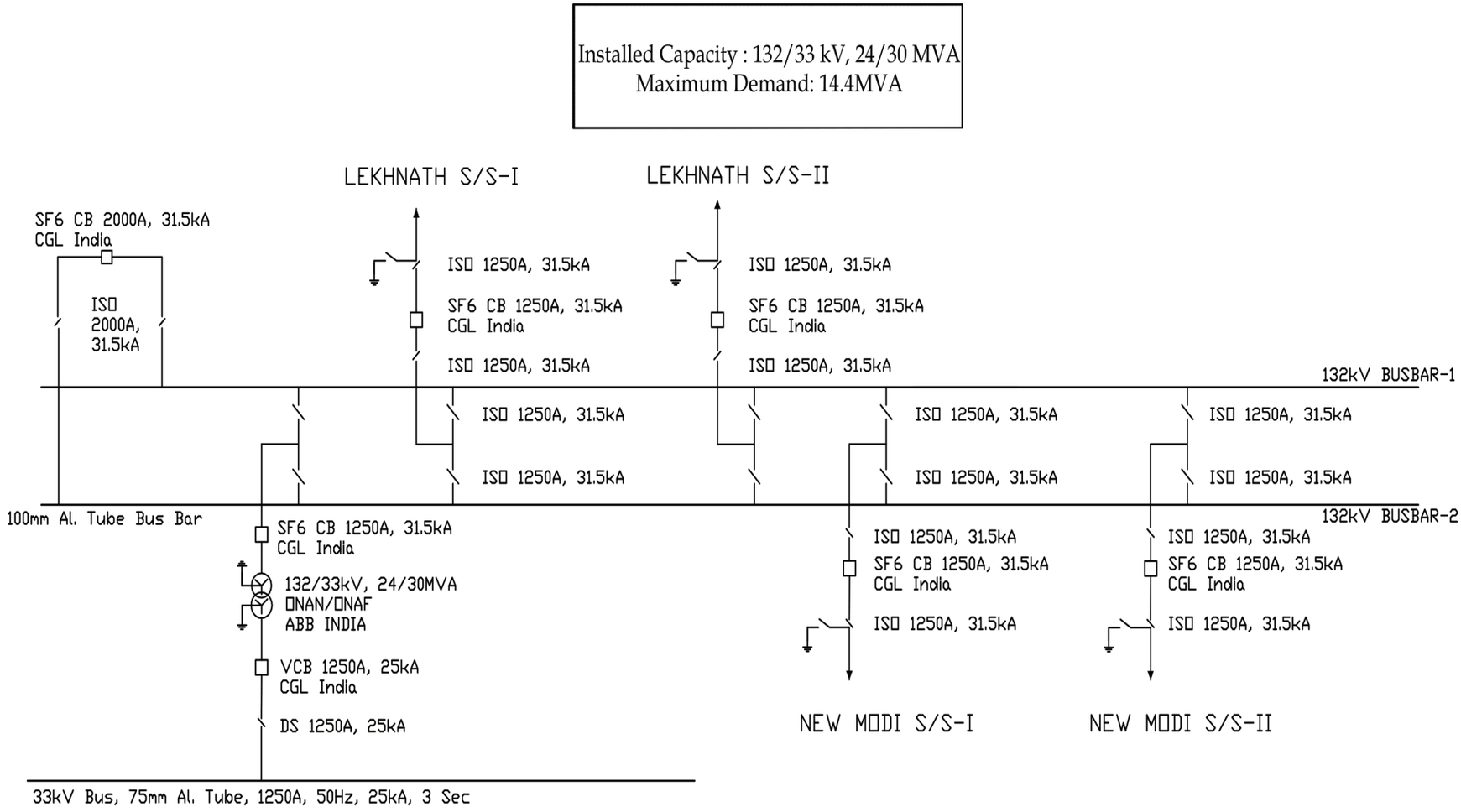
New Modi Substation is a 132kV Switching Station with Double Bus System located at Modi RM-2, New Modi evacuates POWER from hydropower projects located at Modi river basin. and connects NEA Modi Powerhouse and Pokhara Substation. This Substation was charged on October 31, 2021. Hydropower projects like Middle Modi (18MW) Upper Modi A (42 MW), Upper Modi (14 MW), Gandruk Modi (111 MW) will be connected to this substation.

Installed Capacity : 132 kV Switching Station



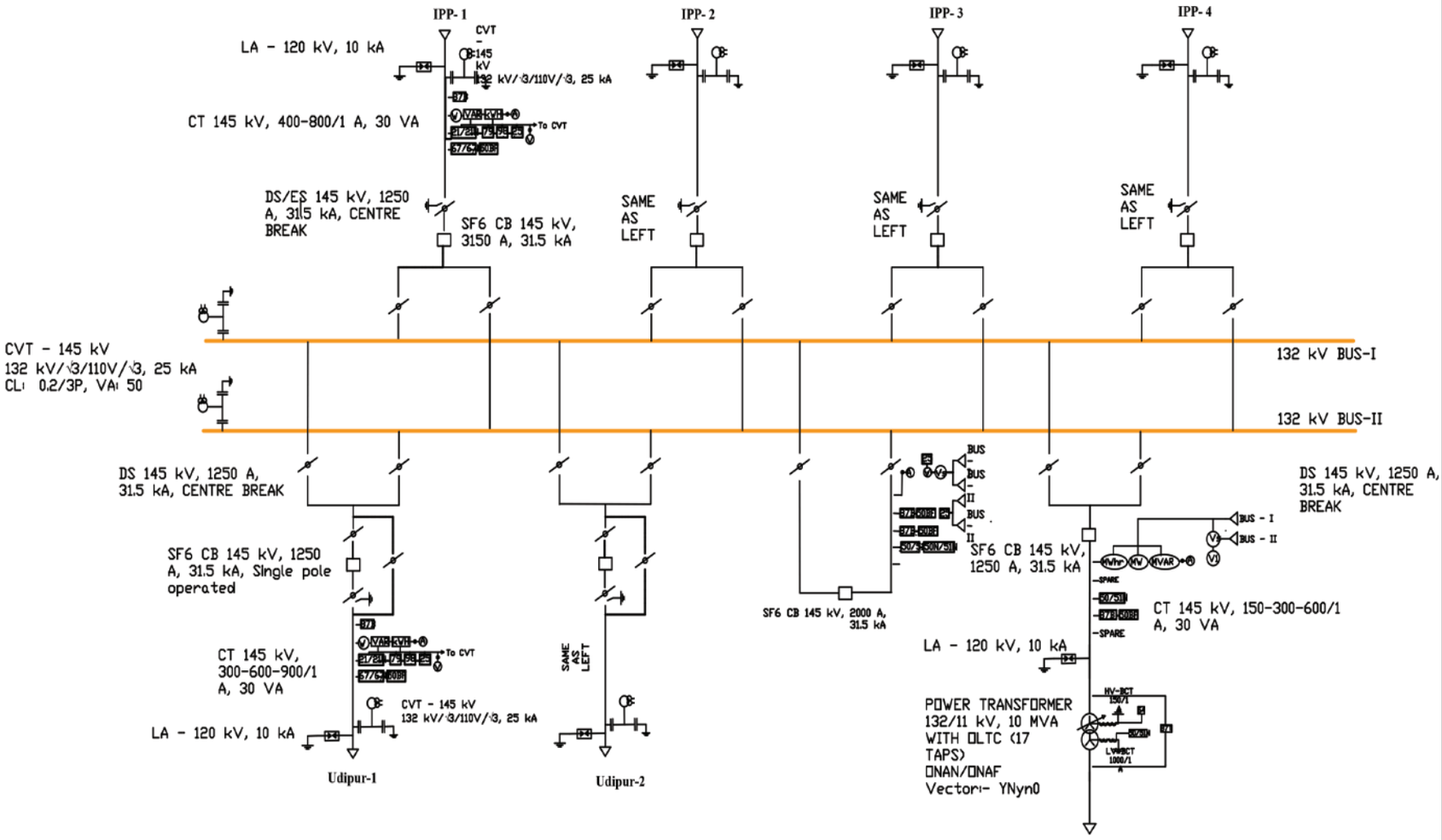
59. LAHACHOWK SUBSTATION

Lahachowk Substation with Double Bus System located at Machapurchhre RM-4, Lahachowk S/S evacuates POWER from hydropower projects located at Seti river, Mardi river, Sardi river and Madi river. This Substation was commissioned on December 29, 2021 and charged with load on January, 2022. The Substation has 1 No. of 132/33kV, 24/30 MVA and 1 No. of 33/11kV, 6/8 MVA Power Transformer. Four 11kV local feeders are distributed from this Substation to supply mainly RM loads. Existing hydropower like Sardi Khola (4MW), Mardi Khola (4.8MW), Idi Mardi (7.1MW) are constructing their 33kV bays to be connected in this substation. Seti Nadi (25 MW), Karuwa Seti (32 MW), Upper Seti (20 MW) will be connected in 132kV in near future.,



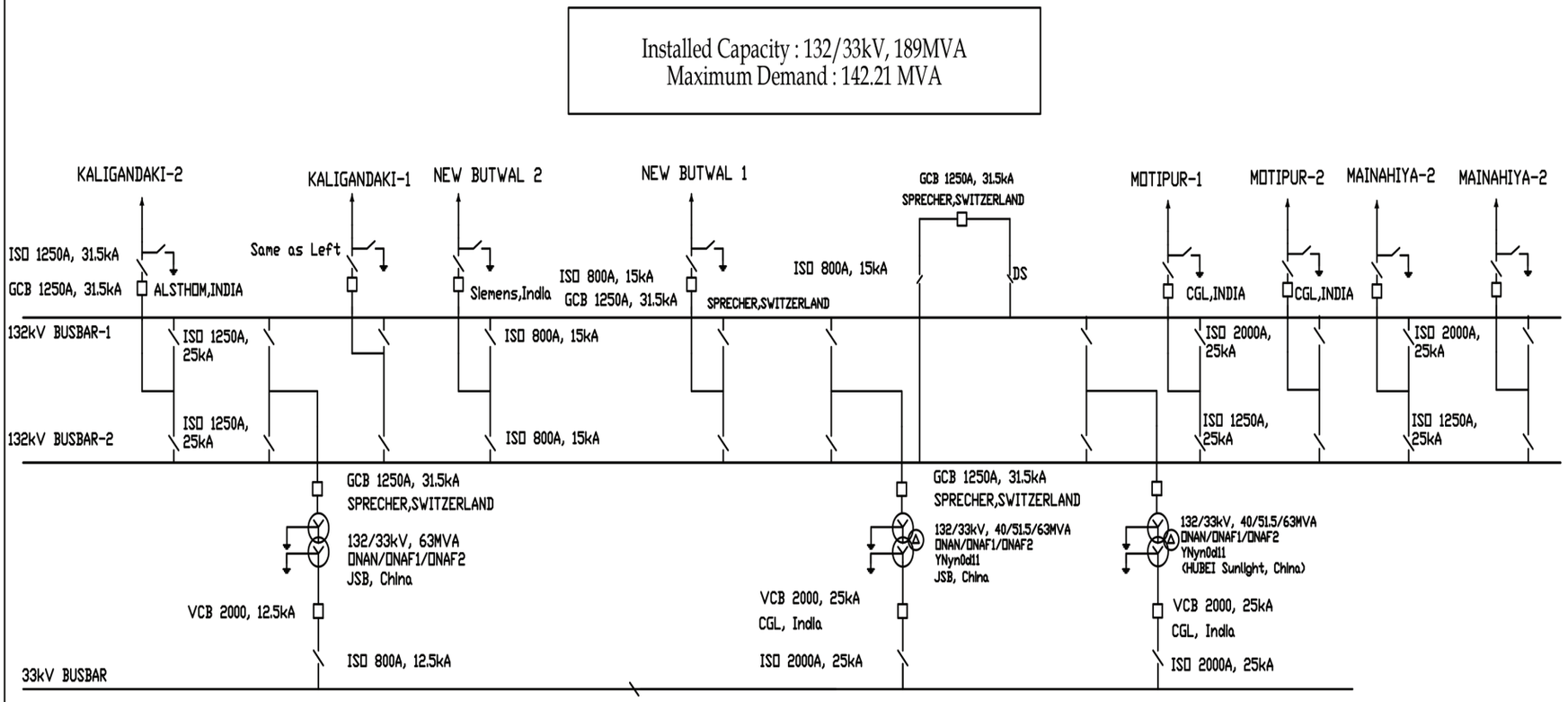
60. KIRTIPUR SUBSTATION

Kirtipur 132/11 kV substation, with double Busbar system located at Kirtipur, Dordi Rural Municipality-06 Lamjung, evacuates power from IPP projects of Dordi river and its tributaries in Lamjung district. This substation was charged on Asar 21 2079 B.S. (July 5, 2023). The substation has 1 no. of 132/11 kV, 10 MVA power transformer. Existing Hydropower like Dordi-1 HEP (12 MW), Dordi Khola HEP (27 MW), Upper Dordi 'A' HEP (25 MW), Super Dordi 'Kha' HEP (54 MW) and Chepekhola HEP (8.63 MW) are evacuating their power to this substation.



61. BUTWAL SUBSTATION

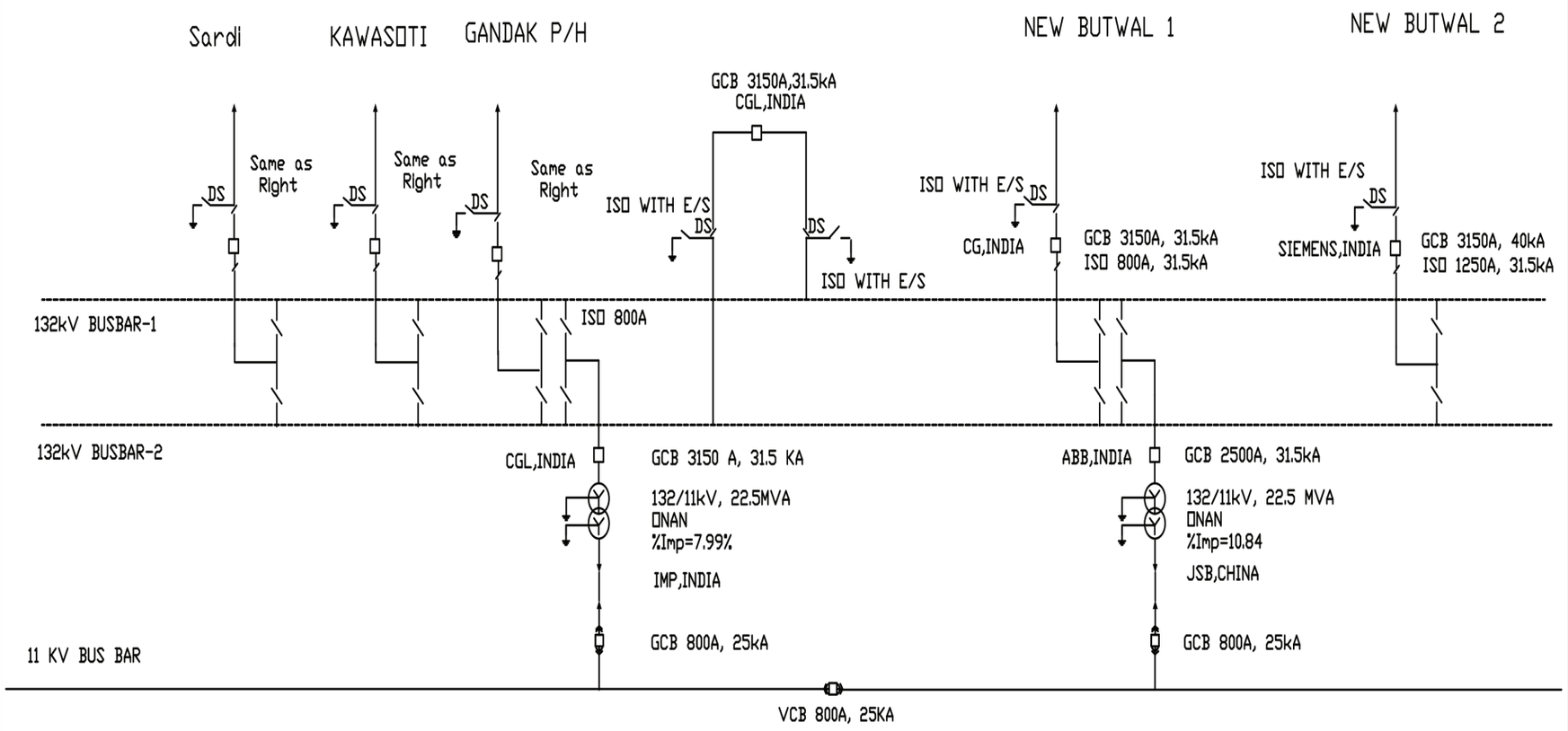
Butwal substation with main and Transfer bus system was recently converted into double bus system. This Substation is located at Jogikuti of Rupendehi district of Lumbini zone feeds power to Butwal, Palpa, Lumbini and Bhairahawa. This substaion is connected to Kaligandaki Power house and New Butwal substaion by 132kv double circuit line. It is also connected to Motipur substaion by 132kV Double circuit line.This substation was commissioned in 1985 with 132/33 kV two numbers of 10 MVA transformers. One of the 10MVA transformer was replaced with 132/33kV 30MVA in 2002 and other 10MVA was repalced with 30MVA in 2005. Two line bays are constructed in 2002 to evacuate the power from Kaligandiki Power House. Replacement of one 132/33 kV 30 MVA transformer with 63 MVA transformer will shortly be completed before October 2009. Upgradation of 33/11 kV 8MVA with 16.6 MVA was completed on November 2008. Another 132/33kV, 63MVA Power Transformer has replaced 30MVA Power Transformer in 2010. 33/11kV, 8MVA was upgraded to 16.6MVA in 2015. A new 132/33kV, 63MVA Transformer Bay was added in 2017 and further 33/11kV, 16.6MVA Transformer bay was added in 2019. In 2021, 33/11kV, 16.6MVA Transformer is replaced by 33/11kV, 24MVA



62. BARDAGHAT SUBSTATION

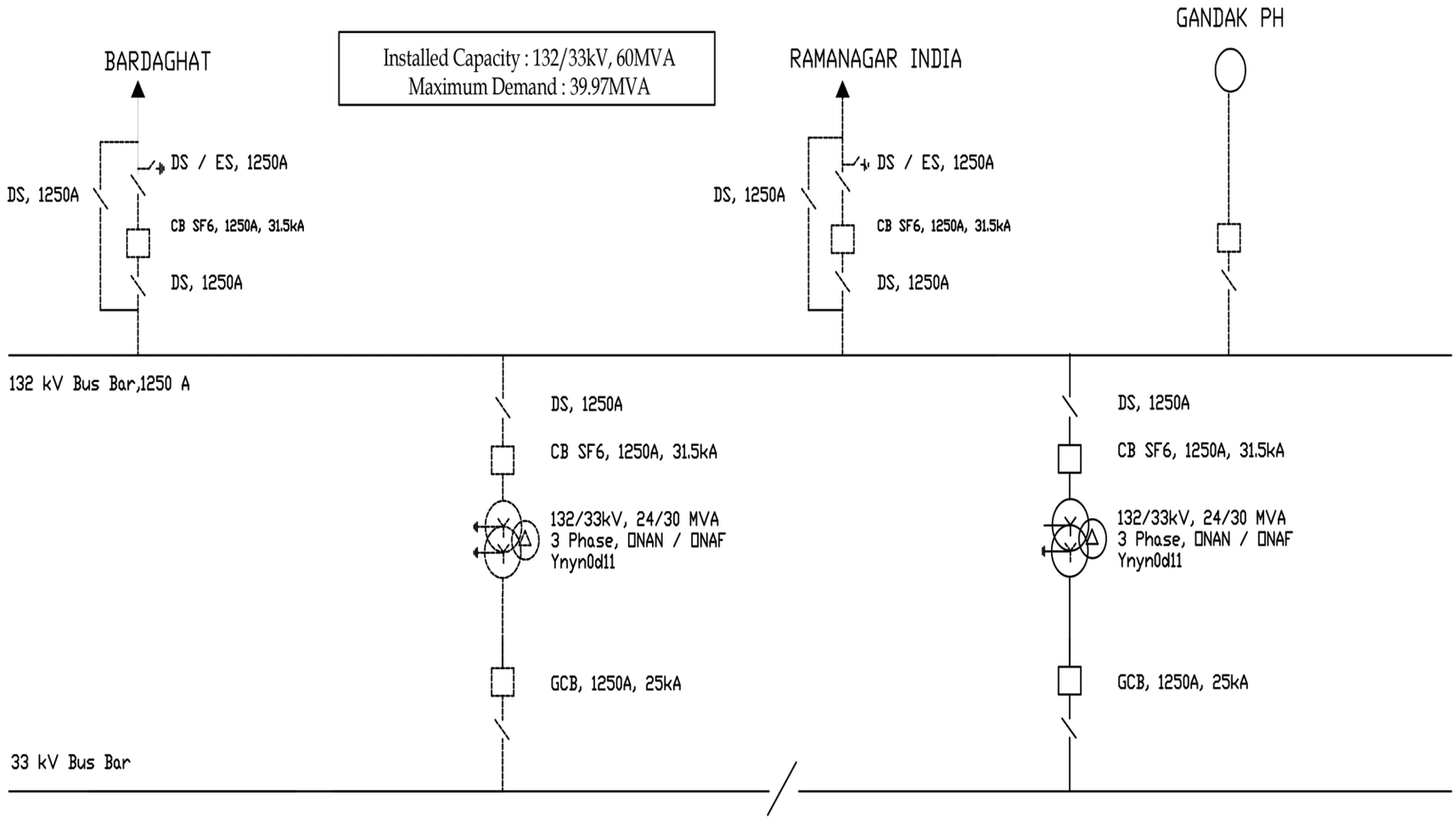
Bardaghat substation with Double Bus system, located at Bardaghat of Nawalparasi district of Lumbini Zone feeds power to Bardaghat, Sunawal, Pratappur and Dumkibas. This substation is connected to Gandak Power House and New Bharatpur substation by 132kV single circuit line. It is also connected to New Butwal substation by 132kV double circuit line. This substation was commissioned in 1985 with 132/11 kV, 5 MVA capacity. This substation was upgraded to 6 MVA, replacing old 5 MVA in 2002 . In 2006, new transformer bay was constructed and 132/11 kV 5 MVA Transformer was installed to upgrade the substation capacity to 11MVA. The 5MVA transformer was damaged which was replaced by 7.5MVA in 2008. 6MVA Transformer was upgraded to 15MVA in 2015 which was further upgraded to 22.5MVA making the total capacity to 30 MVA in 2017. Further the existing 7.5MVA was upgraded to 22.5MVA in 2020. This substation is feeding power to Hongshi Cement at Sardi via 132 kV line.

Installed Capacity : 132/11kV, 45MVA
Maximum Demand : 26.98MVA



63. GANDAK SUBSTATION

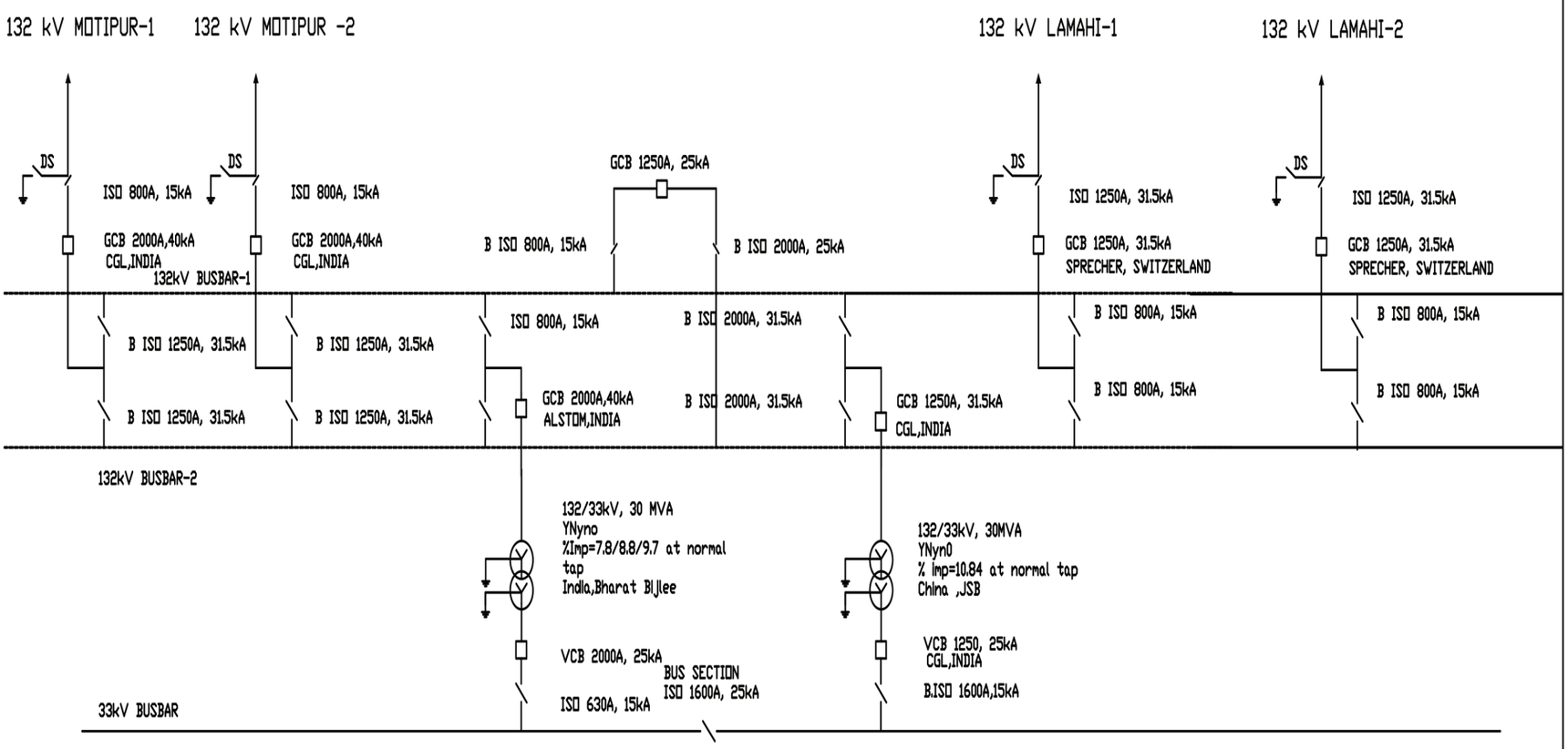
Gandak Substation with single bus system located at Surajpura of Parasi District, feeds power to Parasi and Surajpura area. This substation was built in 2018 A.D. with 132/33 kV,30 MVA Transformer. This Substation is connected with Bardghat S/S and Ramnagar (India) through 132kV Single Circuits. Gandak Power House is also connected in this Substationat 132kV Voltage level. New 132/33, 30MVA transformer bay was added in 2023.



64. CHANAUTA SUBSTATION

Chanauta substation with double busbar system is located at Chanauta of Kapilvastu district of Lumbini zone and feeds power to Krishnanagar, Pipra,Bahadurgunj and Shivpur. This substaion is connected to Motipu and Lamahi substations by 132kV double circuit line. This substation was commissioned in 1986 by Butwal Nepalgunj Project with 132/33 kV, 5 MVA capacity. This substation was upgraded to 10 MVA by construction of new 5MVA transformer bay in 2004. One of the 5MVA was upgraded to 30MVA in 2010 and the other 5 MVA was upgraded to 12.5MVA in 2018 & 12.5 MVA Transformer was upgraded to 24/30 MVA in 2020.

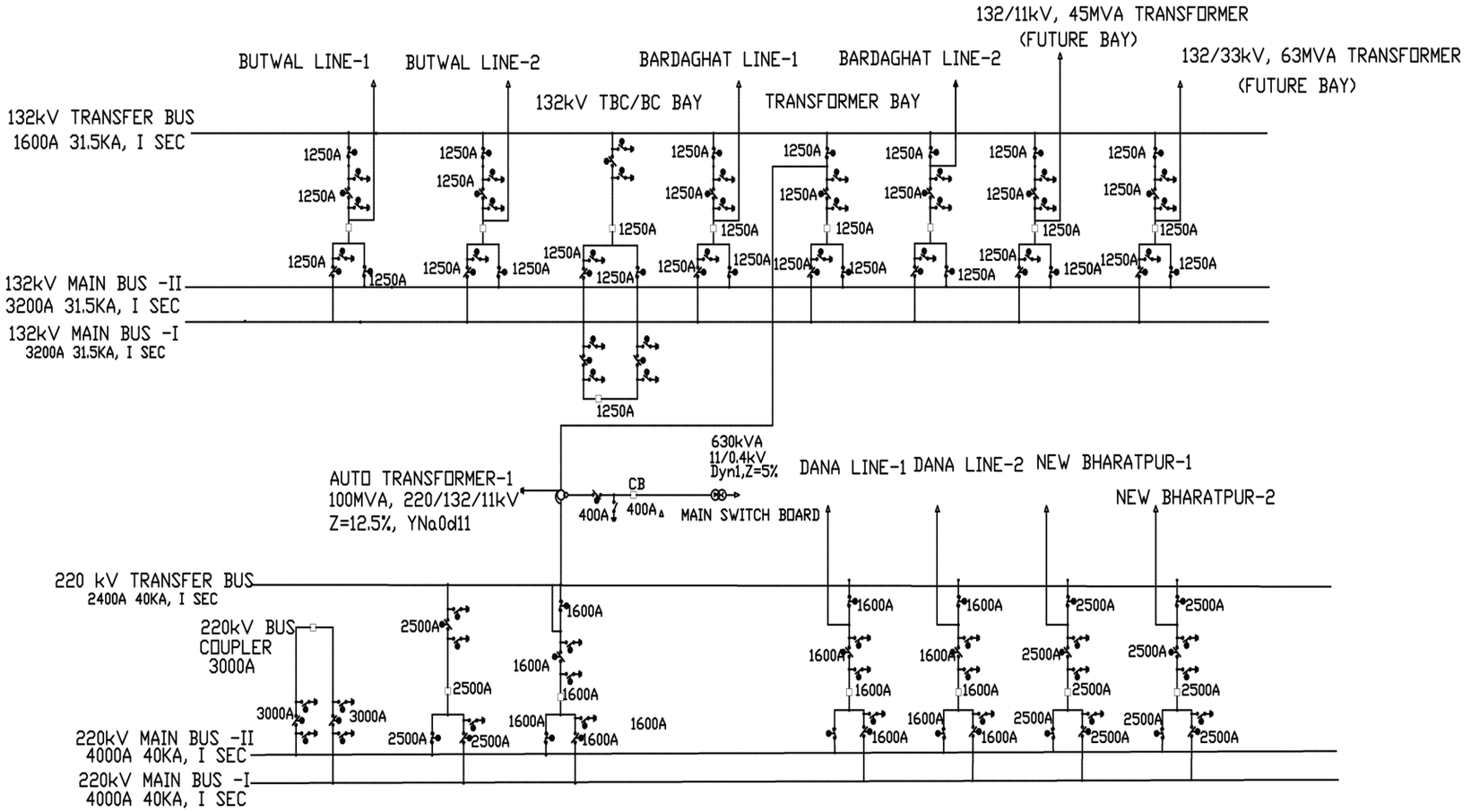
Installed Capacity : 132/33kV, 60MVA
Maximum Demand : 43.66 MVA



65. NEW BUTWAL 220/132KV SUBSTATION

New Butwal Substaion with Doulbe Bus Bar and One Transfer Bus situated at sunwal Muncipality -13 currently charged from LILO of Butwal Bardaghat 132 kV Transmission Line with Capacity of 100MVA

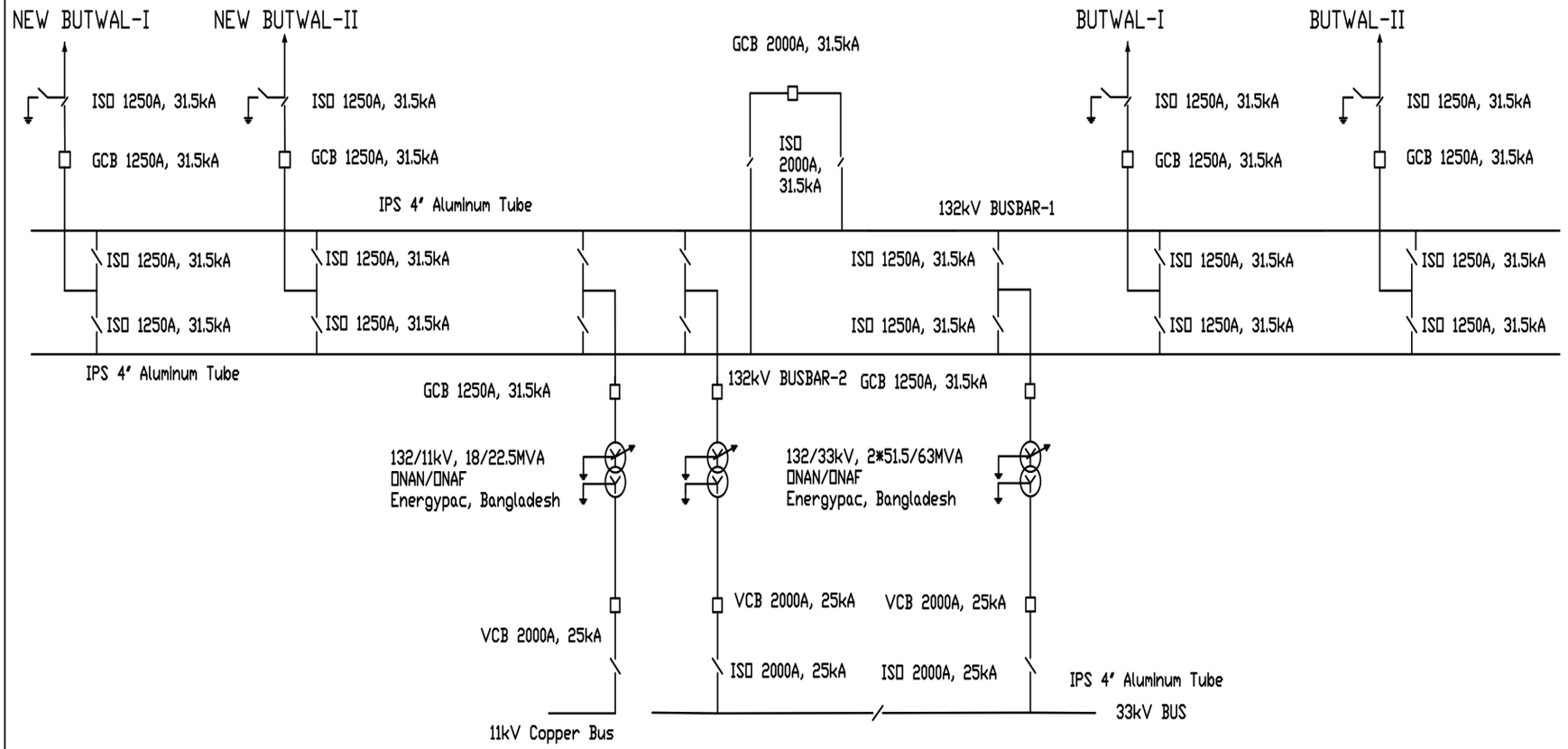
Installed Capacity 220/132 100MVA



66.SUNWAL 132/33/11 kV SUBSTATION

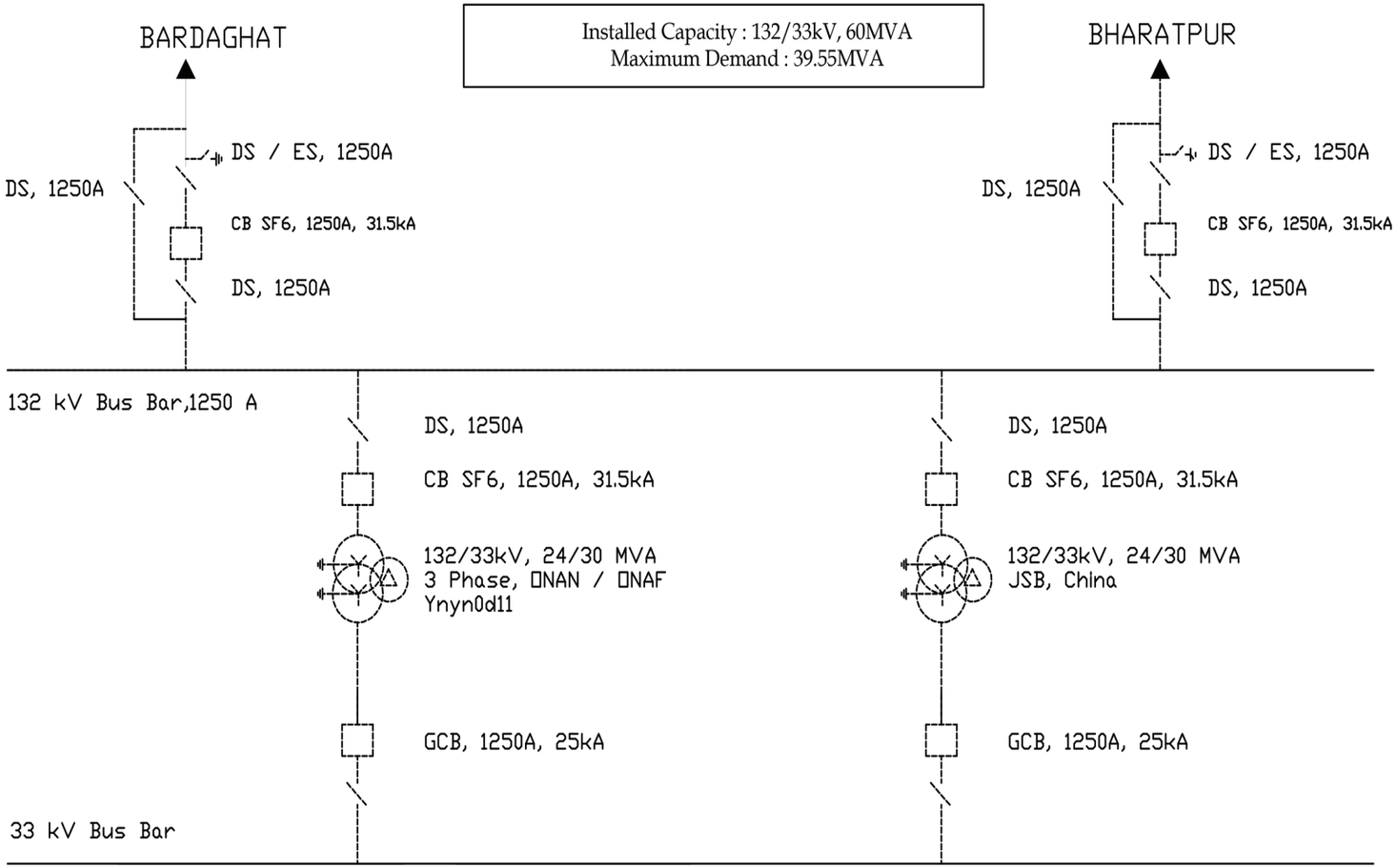
Sunwal Substation with Double Bus System is located at Sunwal Municipality -7, Charpala Nawalparasi (West). Sunwal Substation helps to supply adequate power to the nearby industries through 33kV feeder and 11kV local distribution feeders. It helps in reliable, quality and uninterrupted supply of 33 kV and 11 kV voltage level. Sunwal Substation has been charged and feeds power with 7 different 33 kV feeders and 3 different 11kV feeders.

Installed Capacity : 132/33kV, 2*51.5/63 MVA
& 132/11kV, 1*18.5/22 MVA



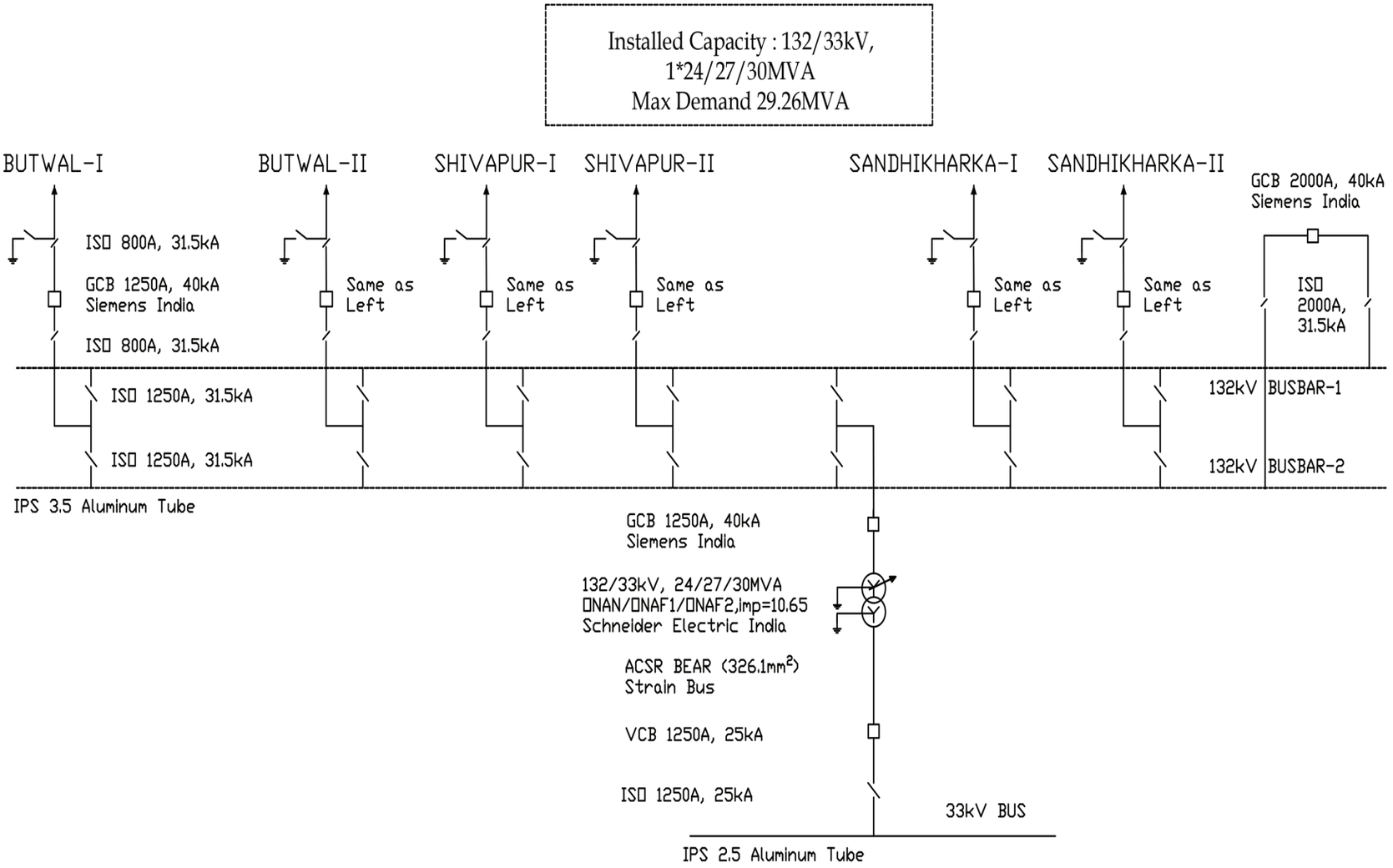
67. KAWASOTI SUBSTATION

Kawasoti Substation with single bus system located at Nawalparasi District, feeds power to Kawasoti, Mukundapur and local surrounding area. This substation was built in 2009 A.D. with 132/11 kV, 24/30 MVA and 33/11 kV, 6/8 MVA Transformers with the grant aid of Japanese Goverment. This Substation is interconnected with Bardaghat and Bharatpur S/S to facilate smooth power flow and to supply increasing power demand of local area. The 33/11kV, 8MVA Transformer was upgraded to 16.6MVA in the year 2017.The substation was further upgraded to 2*30MVA .



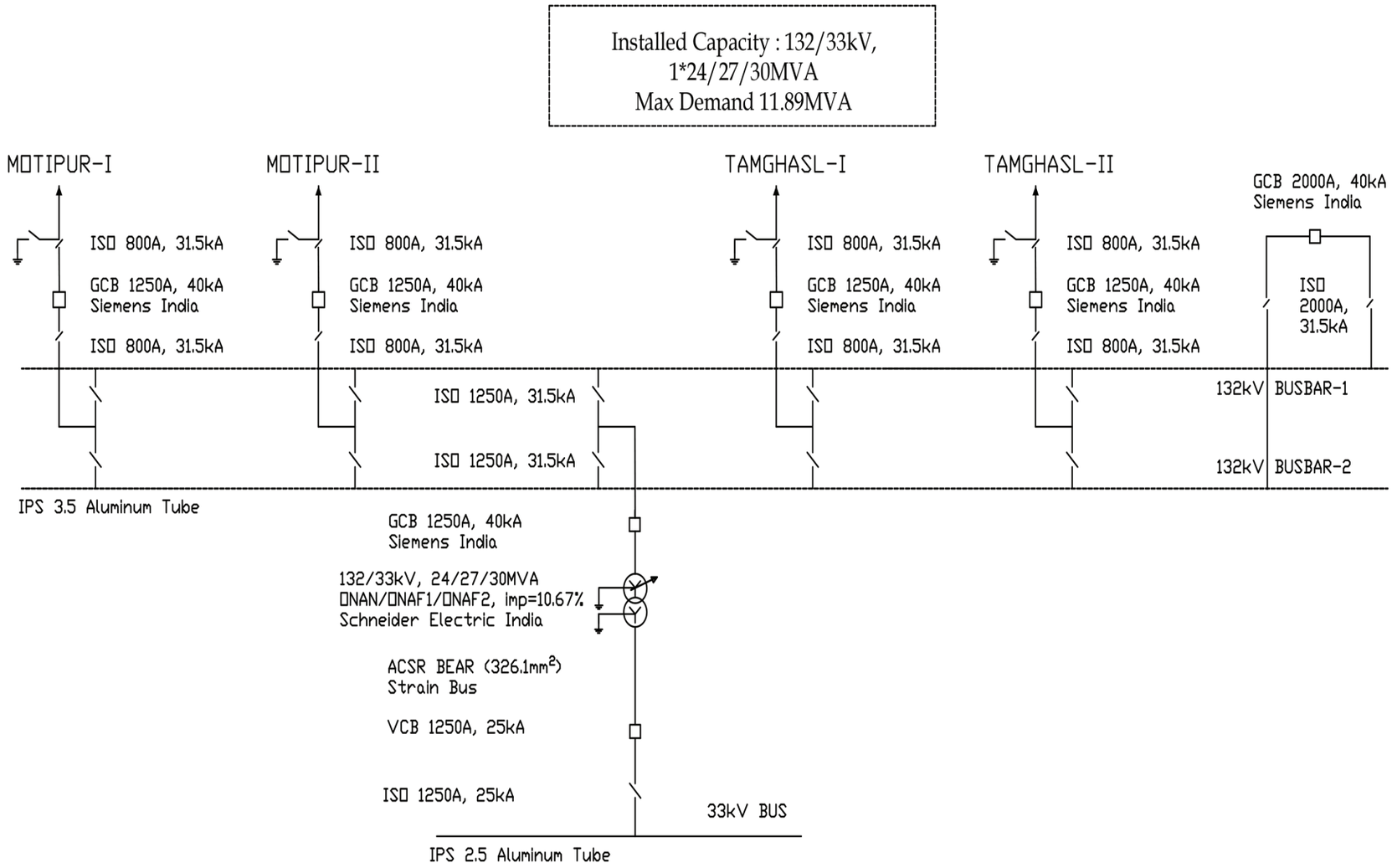
68. MOTIPUR 132/33/11 kV SUBSTATION

Motipur Substation with Double Bus System located at Kapilvastu Jitpur-7, Motipur Danda is commissioned to upgrade the quality of the electricity in Kapilvastu district as well as to extend 132kV transmission line to Arghakhachi, Gulmi and western part of Baglung district. Motipur substation is linked to Butwal substation in the east, Shivapur (Chanauta) substation in the west and Sandhikharka substation in the north. The substation is designed to distribute the power from four 33kV feeders and three 11 kV feeders.



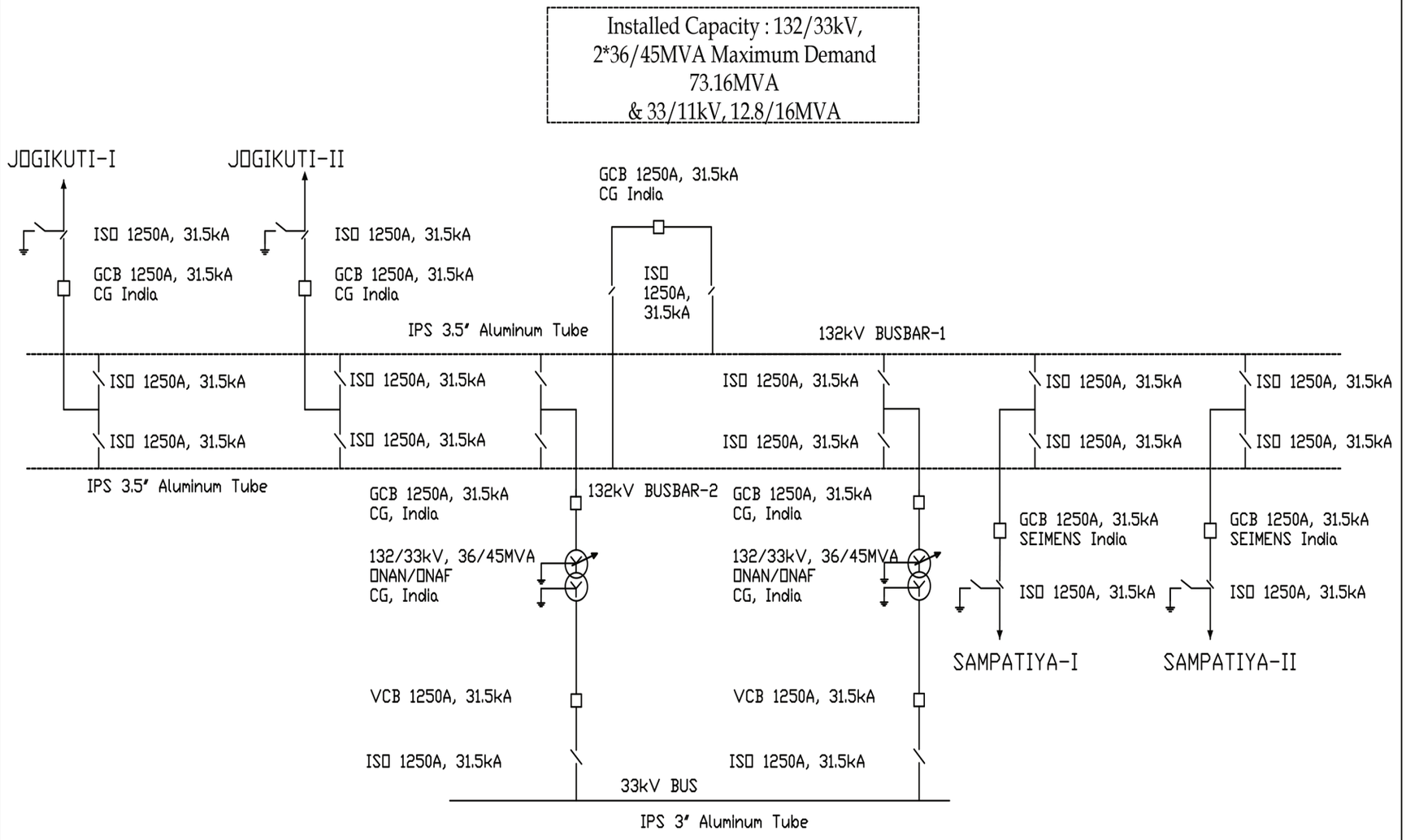
69. Sandhikharka 132/33/11 kV SUBSTATION

Sandhikharka Substation with Double Bus System located at Arghakhachi, Sandhikharka-6, Fudbang and is the first substation with 132kV voltage class of the district. This substation was constructed to upgrade the power quality and reliability of the electricity in Arghakhachi district as well as to extend 132kV transmission line to, Gulmi and western part of Baglung district. Sandhikharka substation is linked to Motipur substation in the south and Tamghas substation (under-construction) in the north. The substation is also designed to distribute the power from four 33kV feeders and three 11 kV feeders.



70.MAINAHIYA 132/33/11 kV SUBSTATION

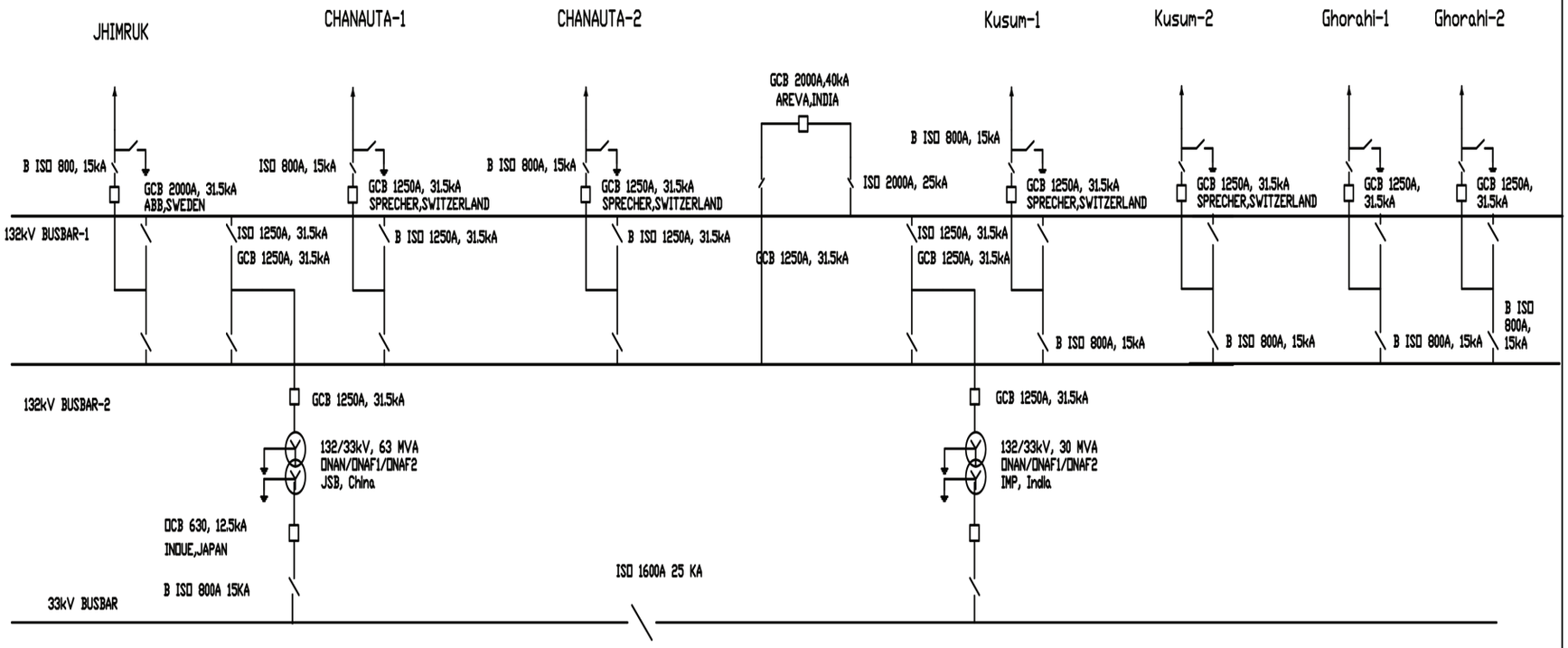
Mainahiya Substation with Double Bus System is located at Mainahiya, Siyari RM-2, Rupandehi. Mainahiya Substation helps to improve supply quality, reliability, voltage and line loss in Rupandehi district by construction of 18 kM double circuit 132 kV Transmission Line linked with existing Jogikuti 132/33/11 kV Substation. Mainahiya 132/33/11 kV Substation has been charged and has feeds power to the industrial load with 4 different 33 kV feeders. The substation has 6 Nos. of additional33 kV line bays required for the future connections.



72. LAMAHI SUBSTATION

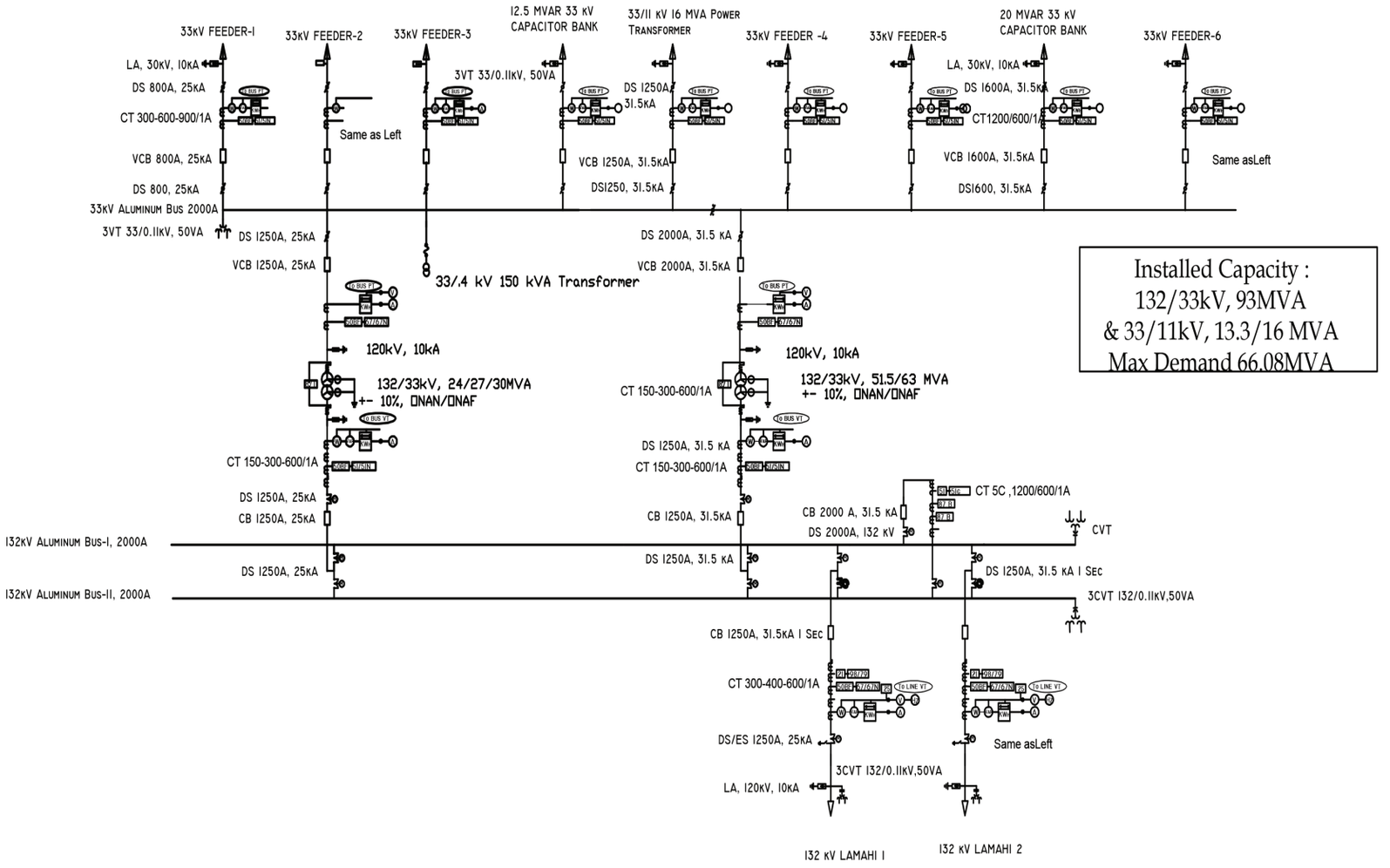
Lamahi substation with double bus system, located at Lamahi of Dang district of Rapti zone feeds power to Lamahi, Ghorahi, Satvariya and Bhalubang. This substaion is connected to Jhimruk power house by 132kv single circuit line to import the IPP's power to NEA grid. This substaion is also connected to Chanauta and Kohalpur substaions by 132kv Double circuit line . Recently the Substation was connected also to Ghorahi Substation through 132kV Single Circuit. This substation was commissioned in 1986 with 132/33 kV, 5 MVA capacity. In 1988 10MVAr reactor was installed to control the over voltage. This substation was upgraded with replacement of 5MVA by 7.5MVA in 2004 and construction of 7.5MVA transformer bay in 2006. The substation, orginally with single bus system, was converted to double bus system in 2006. One of the 7.5MVA Transformer was upgraded to 30MVA in the year 2012 and another 7.5MVA was upgraded to 30 in the year 2016. That 30MVA was further upgraded to 63MVA in the year 2018. Existing 132/ 33kV 30MVA Transformer is moved to another existing grid substation under Grid Operation Department.

Installed Capacity : 132/33kV, 93MVA
Maximum Demand : 66.08MVA



73. GHORAHI 132 kV SUBSTATION

Ghorahi Substation with Double Bus System located at Jhingani, Ghorahi submetro Municipality-3 for supply of industrial, commercial and domestic consumers
The Substation is connected with Lamahi 132 kV Substation by 12.5 km long 132kV double circuit transmission line .

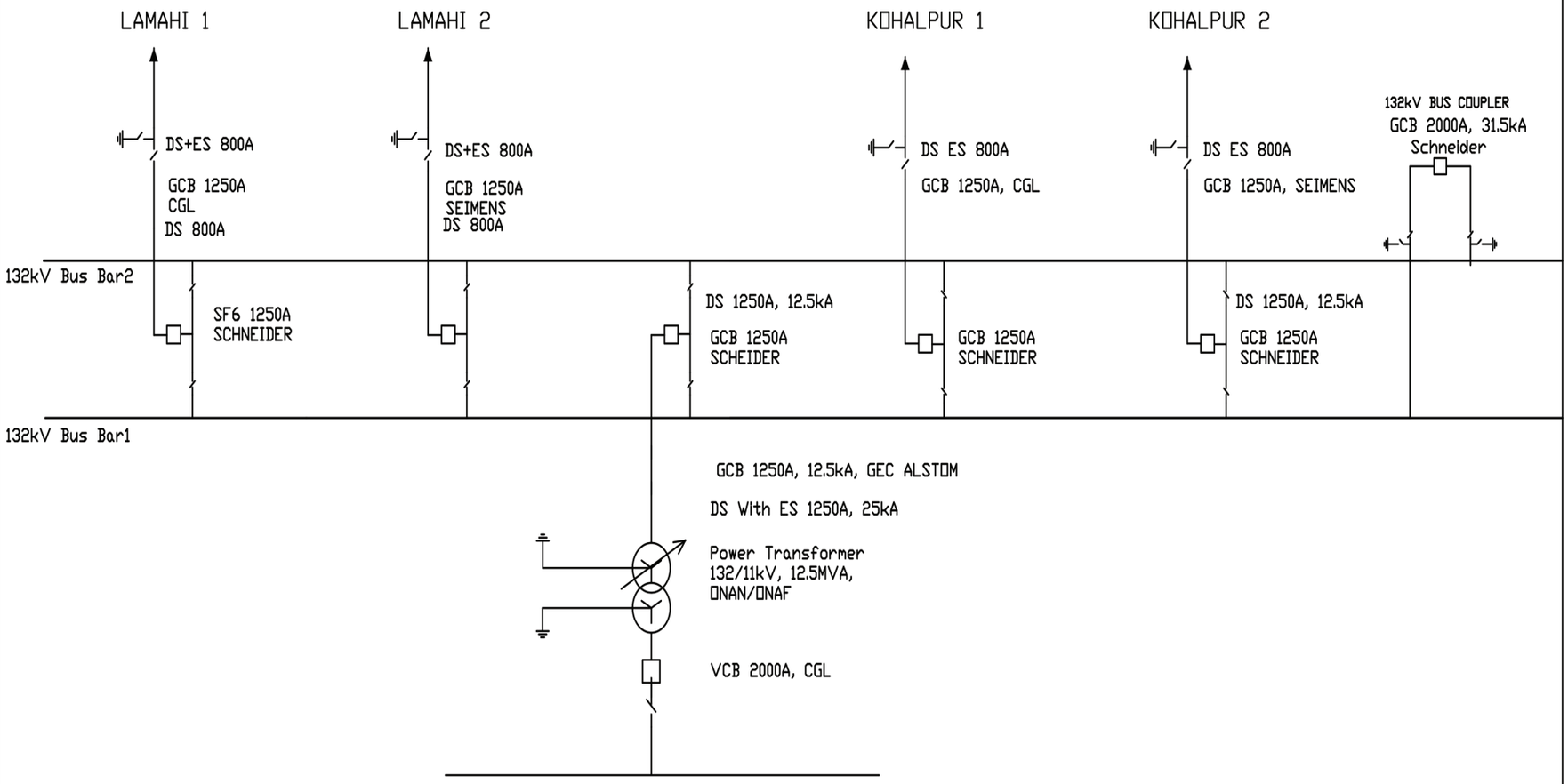


Installed Capacity :
132/33kV, 93MVA
& 33/11kV, 13.3/16 MVA
Max Demand 66.08MVA

74. KUSUM SUBSTATION

Kusum substation is located at Kusum of Banke District, Seti Zone. This Substation was Build Between the Existing Lamahi Kohalpur 132 KV Double circuit line. This Substation was commissioned in 2016 with 132/11kV, 30MVA capacity. The 30MVA Transformer was replaced by 12.5MVA in 2017.

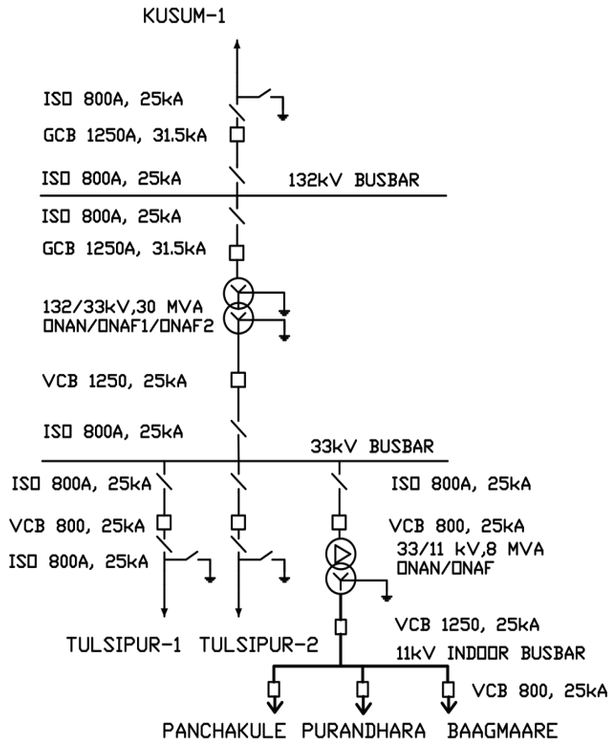
Installed Capacity : 132/33kV, 12.5MVA
Maximum Demand : 2 MVA



75. HAPURE SUBSTATION

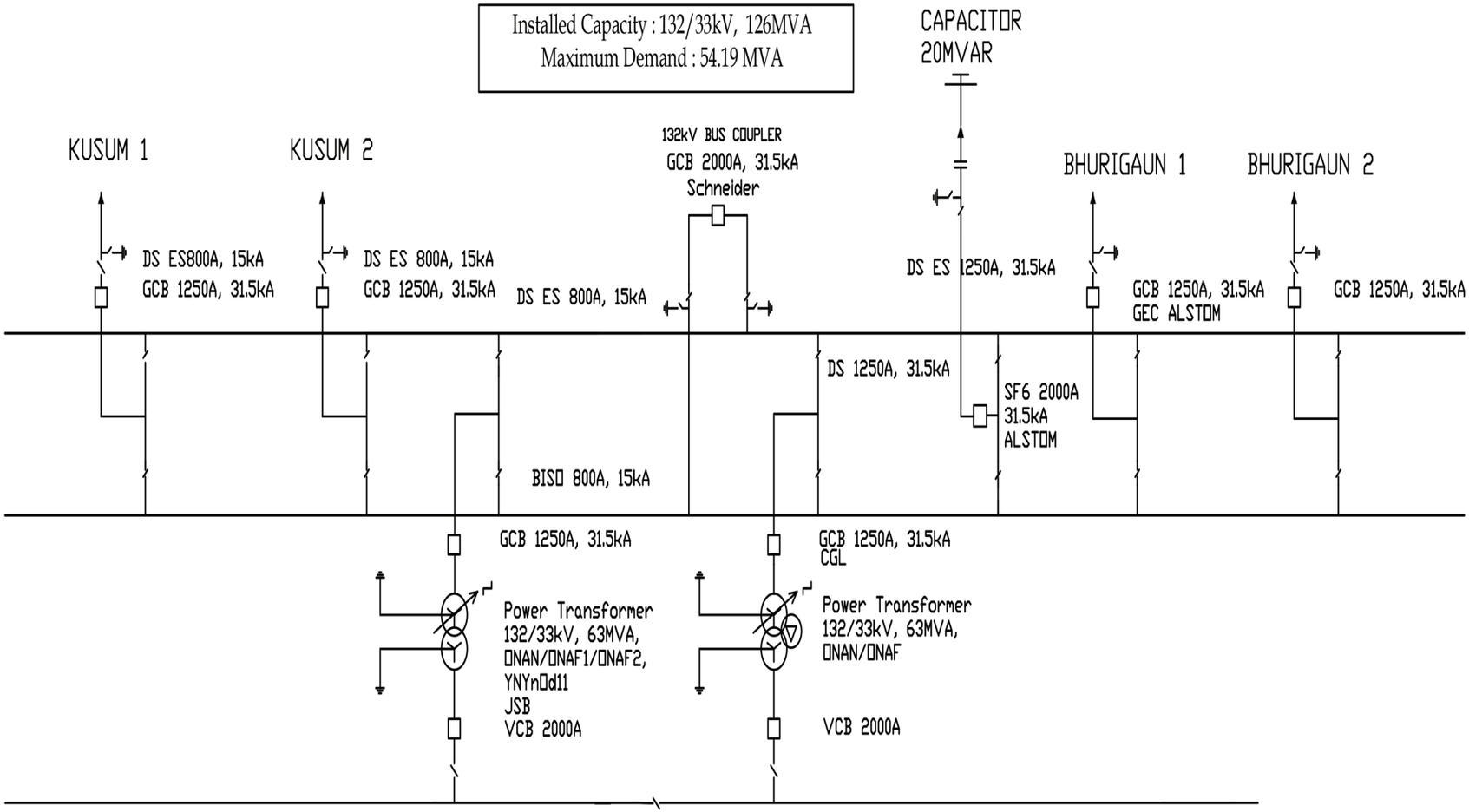
Hapure Substation is located at Babaai Rural Municipality of the Dang District. The Project was initiated for the power supply to the Dang Cement Industries Pvt. Ltd. but now is the main supply of quality Power in Tulsipur Sub-Metropolitian City with two 33 kV feeders and the *Babaai* Rural Municipality from Panchakule, Purandhara and Baaghmaare 11 kV feeders. The substation is constructed as a Single Bus bar system both for 132 kV and 33 Kv and indoor bus bar of 11 kV. The substation receives Power from Kusum Substation via single Circuit 132 kV Bear Conductor in a Double Circuit Tower. The substation was Commissioned partly on 29/08/2017 for the 132/33 kV and 25/12/2018 for the 33/11 kV Substation. The 132/33 kV Substation consists of one 132 kV incoming line, one 132/33 kV, 30 MVA Power Transformer and two 33 kV outgoing line. The substation was constructed by the Contractor TBEA Deyang Cable Co. Ltd. The 33 kV Busbar was extended to construct one 33/11 kV, 8 MVA Transformer Bay with three 11 kV Outgoing Feeders. The 33/11 kV Substation was constructed by Ms. Mudbhary & Joshi Construction Pvt. Ltd. The two 33 kV line feeds the Tulsipur 33/11 kV Substation while three 11 kV feeder distributes power to the Western Region of the Dang valley.

Installed Capacity : 132/33kV, 30MVA
Maximum Demand : 19MVA



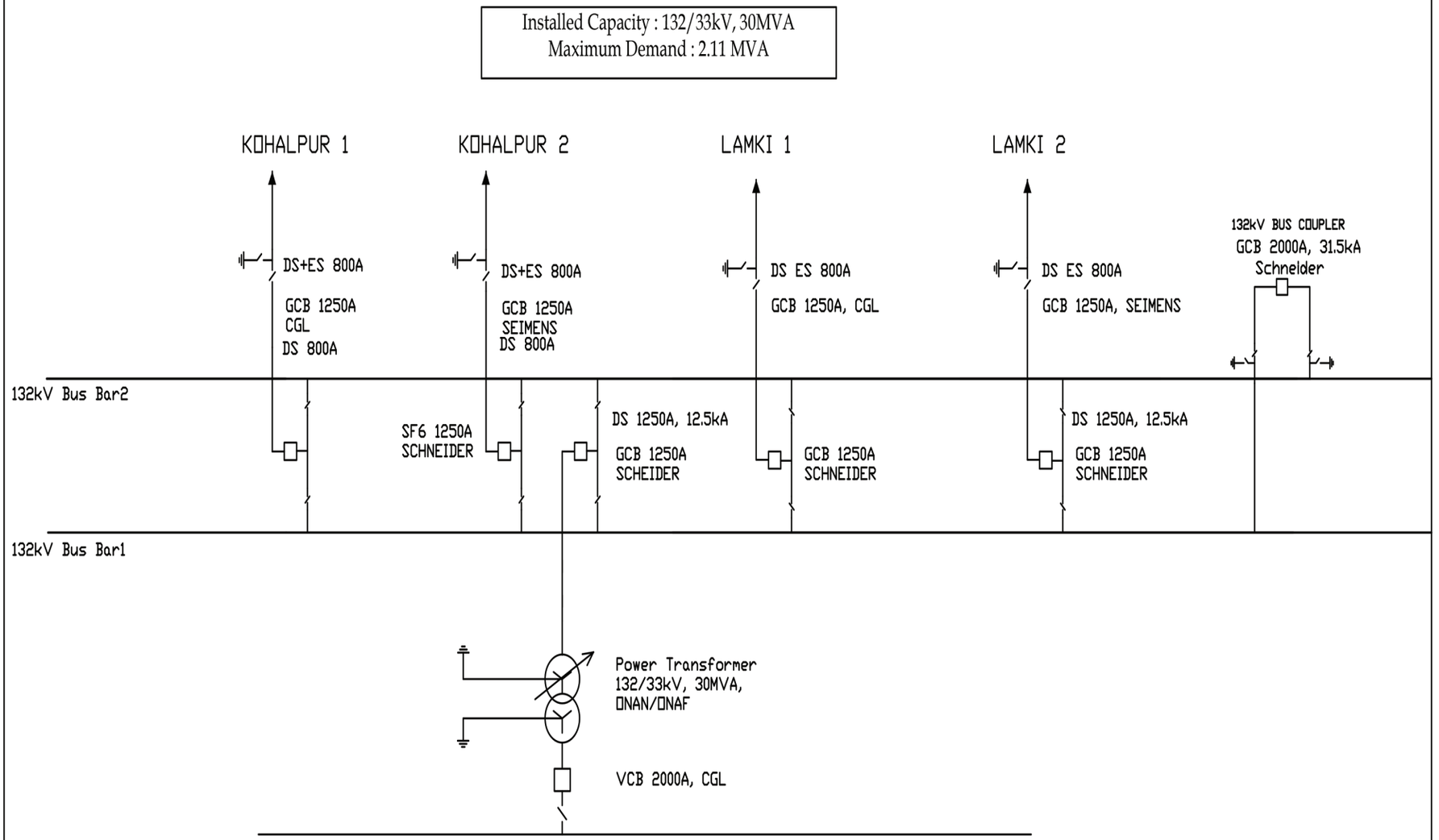
76. KOHALPUR SUBSTATION

Kohalpur substation with double bus system, located at Kohalpur of Banke District feeds power to Surkhet, Gulariya, Nepalgunj, Ranjha and Kohalpur. This substaion is connected to Lamahi and Lamki substaions by 132kv double circuit line. This Substation was commissioned in 1987 with 132/33kV, two numbers of 5MVA transformers. The main and transfer bus system was converted to double bus system in 2002. One of the 5MVA Transformer was replaced by 10MVA Transformer in 2002, which was again replaced by 15MVA single phase transformer after 10MVA was damaged in 2004. Further upgradation was made in 2007 when another 5MVA Transformer was replaced by a 10MVA transformer. The 10MVA was upgraded to 30MVA in 2015 while the 15MVA was also upgraded to 30MVA in 2017. One of the 30MVA was further upgraded to 63MVA in 2019. Another 30MVA was further upgraded to 63MVA in 2022.



77. BHURIGAUN SUBSTATION

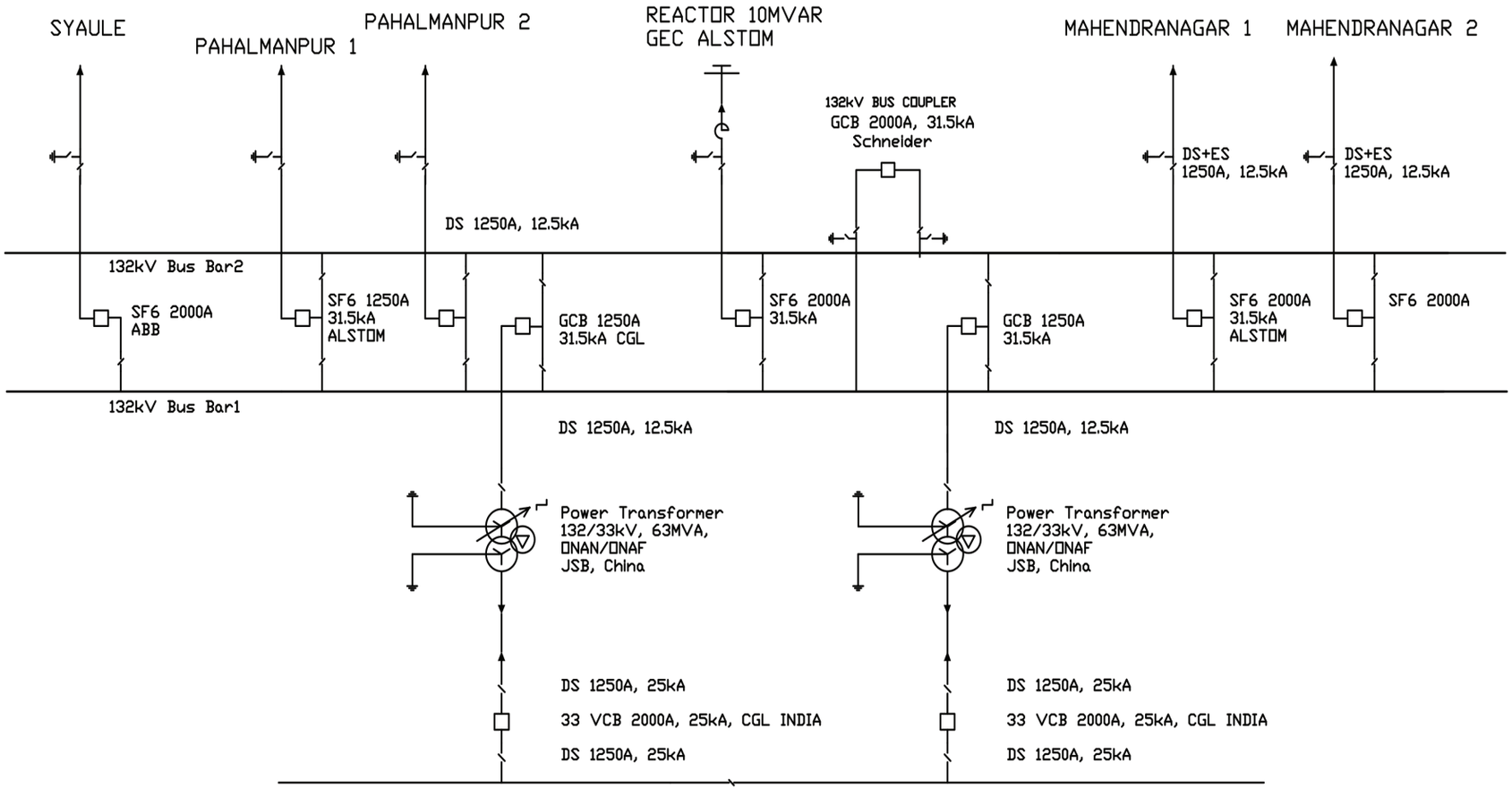
Bhurigaun substation is located at Bhurigaun of Bardiya District, Bheri Zone, feeds power to Bhurigaun and Thakurdwara area. This Substation is was Build Between the Existing Lamki Attaria 132 KV Double circuit line by Kohalpur Mahendranagar Double Circuit Project. This Substation was commissioned in 2018 with 132/33kV, 30MVA capacity and 33/11, 8 MVA.



78. ATTARIA SUBSTATION

Attaria substation with single bus system, located at Attariya of Kailali district of Seti zone feeds power to Dhangadi, Dipayal, Attariya, Krishnapur, Chaumala and Geta.This substation is connected to Mahendranagar and Pahalmanpur substations by 132 kV double circuit line and Syaule Substation by 132kV Single Circuit Line. This Substation was built in 1992 with the grant aid of French Government with 132/33kV, two numbers of 7.5 MVA transformers. Later, the KKREP installed the 33/11kV, 3MVA transformer. One of the 7.5MVA Transformer was upgraded to 15MVA in 2009 while the other 7.5MVA was upgraded to 15MVA in 2014. Those Transformers were further upgraded to 2x30MVA in 2016.In 2024 2x30MVA Transformers were also upgraded to 2x63MVA Transformers.

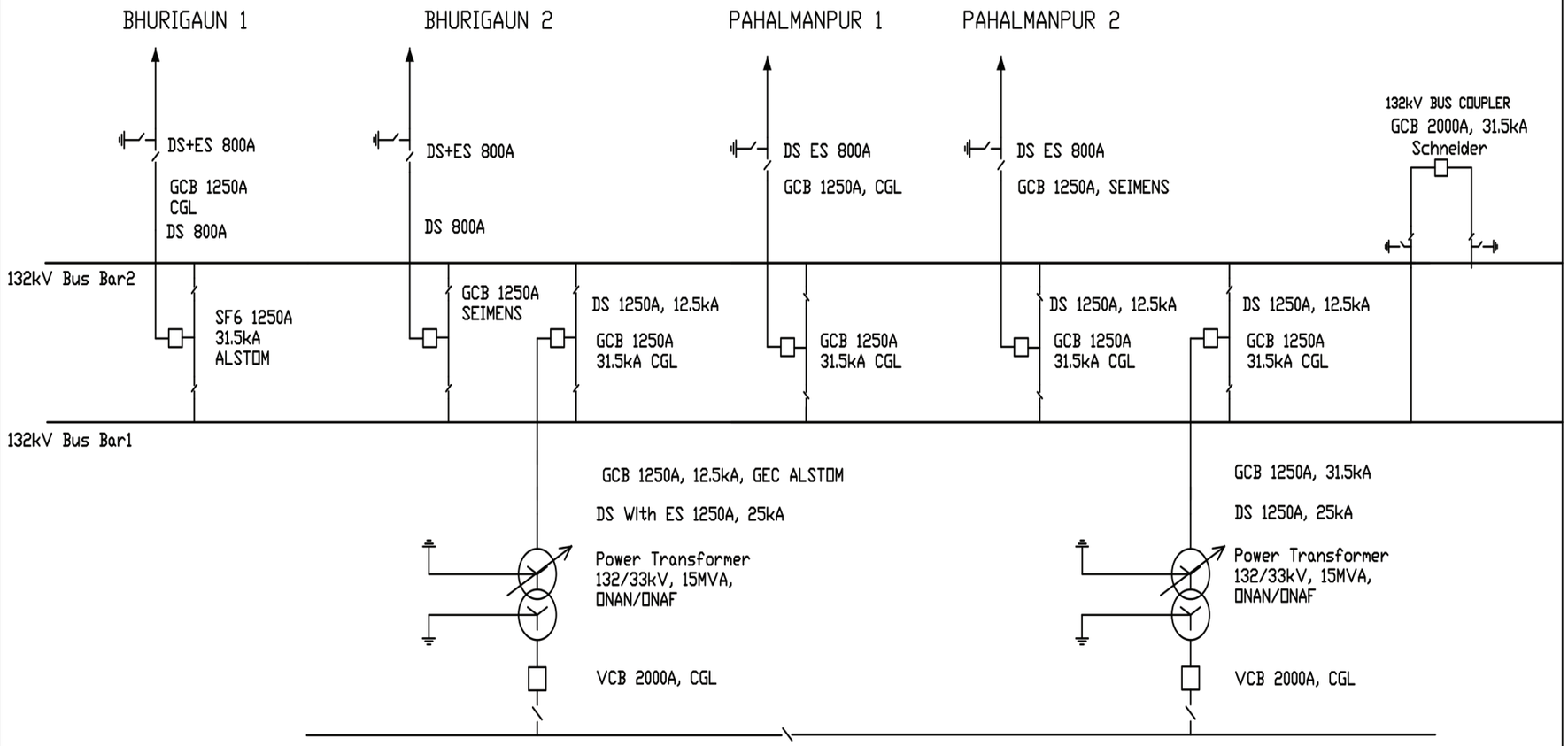
Installed Capacity : 132/33kV, 126 MVA
Maximum Demand : 40.23 MVA



79. LAMKI SUBSTATION

Lamki substation located at Lamki of Kailali District, Seti Zone, feeds power to Lamki, Tikapur, Chuha Lamki, Chisapani and Baliya. This Substation is connected to Bhurigaun and Pahalmanpur by 132 kV double circuit line. This Substation was commissioned in 1992 with the grant aid of French Government with 132/33kV, 7.5MVA capacity. Another 132/33kV, 7.5MVA Transformer bay was added in 2014. The 2x 7.5 MVA Transformers were further upgraded to 2x15MVA one in 2016 and another in 2018.

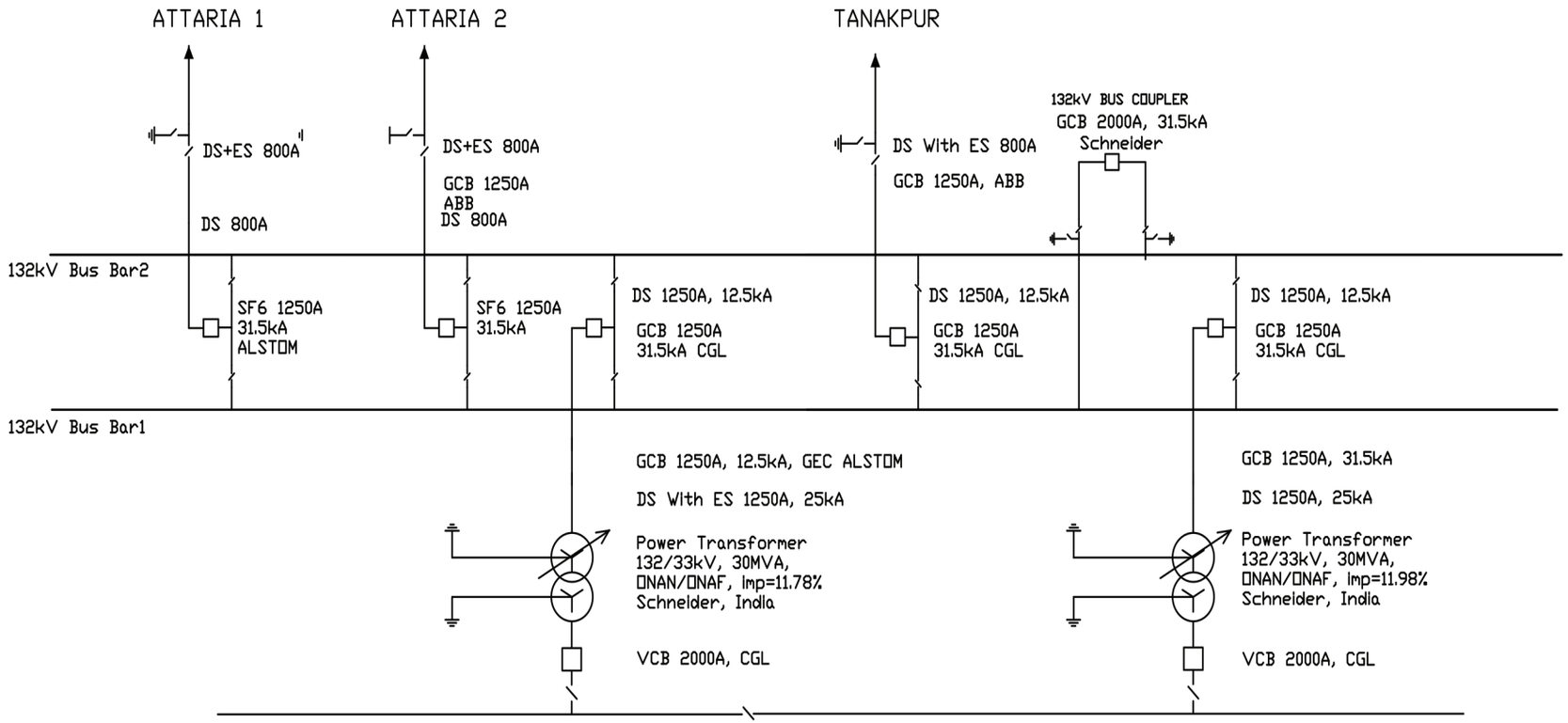
Installed Capacity : 132/33kV, 30MVA
Maximum Demand : 21.95 MVA



80. MAHENDRANAGAR SUBSTATION

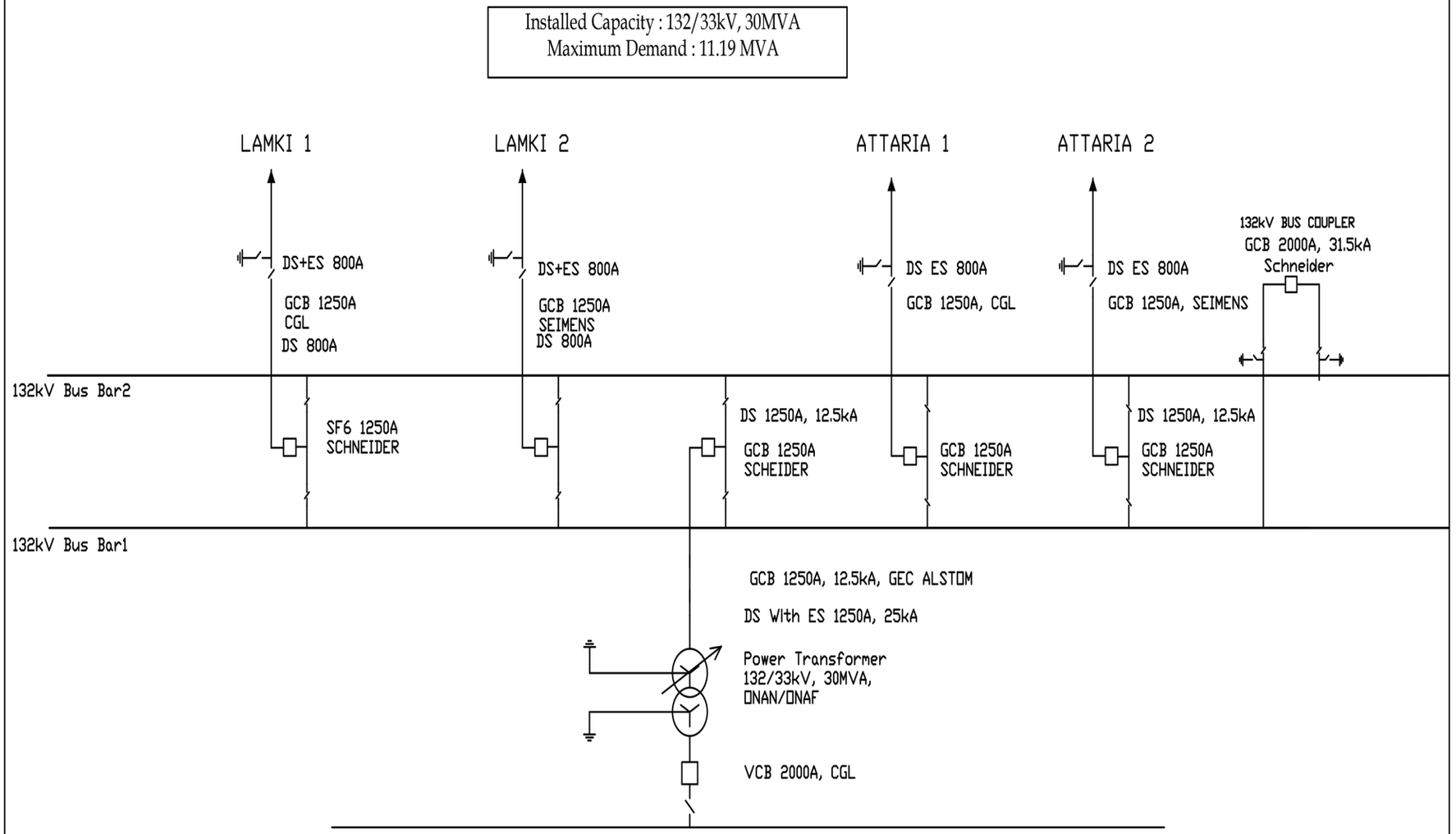
Mahendranagar substation located at Lalpur of Kanchanpur district of Mahakali zone feeds power to Gaddachowki and Jhalari. This subsation is connected to Tanakpur Powerhouse to import the power as per contract agreement between Indian and Nepalese Goverment, which is subsequently connected to Attaria substation by 132 kV double circuit line. This Substation was built in 1992 with the grant aid of French Government with 132/33kV, 7.5MVA capacity. This substation was upgraded in 1999 when the Tanakpur Line bay was added. In 2009 additional 132/33kV, 5MVA Transformer bay with 33kV Feeder was constructed. KKREP has also added one number of 33kV Jhalary Feeder to provide local loads for Jalary and Sripur in FY 2009/10. The 5MVA Transformer was upgraded to 10MVA in 2011. Whereas the 7.5MVA was upgraded to 15MVA in 2017. The 10MVA Transformer was further upgraded to 15MVA in 2019. One of the 15MVA transformer was further upgraded to 30MVA in 2023.

Installed Capacity : 132/33kV, 60 MVA
Maximum Demand : 33.61 MVA



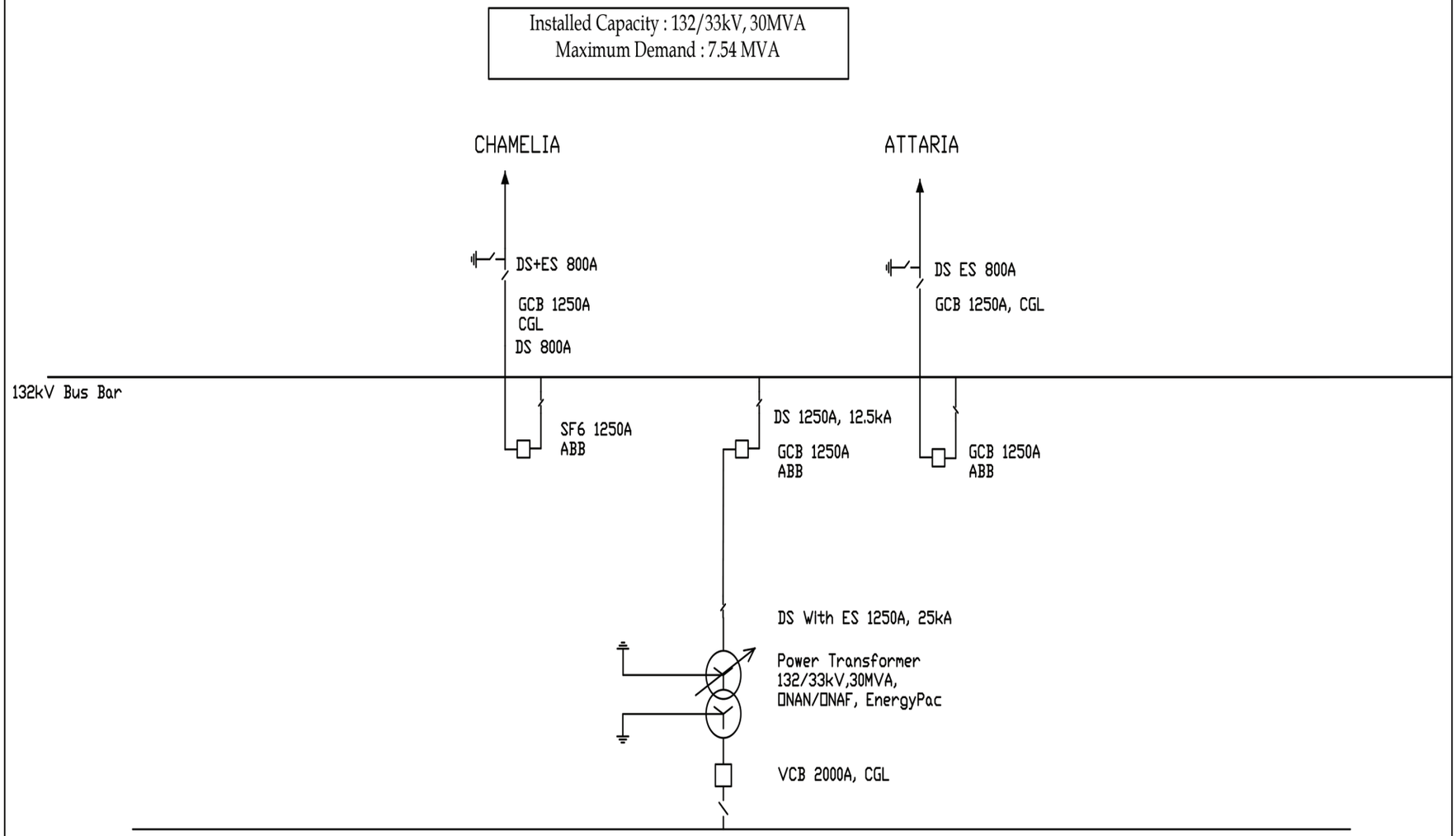
81. PAHALMANPUR SUBSTATION

Pahalmanpur substation is located at Pahalmanpur of Kailali District, Seti Zone, feeds power to Pahalmanpur, Chaumala,Hasulia, Masuria and Sukhad area. This Substation is was Build Between the Existing Lamki Attaria 132 KV Double circuit line by Kohalpur Mahendranagar Double Circuit Project. This Substation was commissioned in 2018 with 132/33kV, 30MVA capacity and 33/11, 8 MVA.



82. SYAULE SUBSTATION

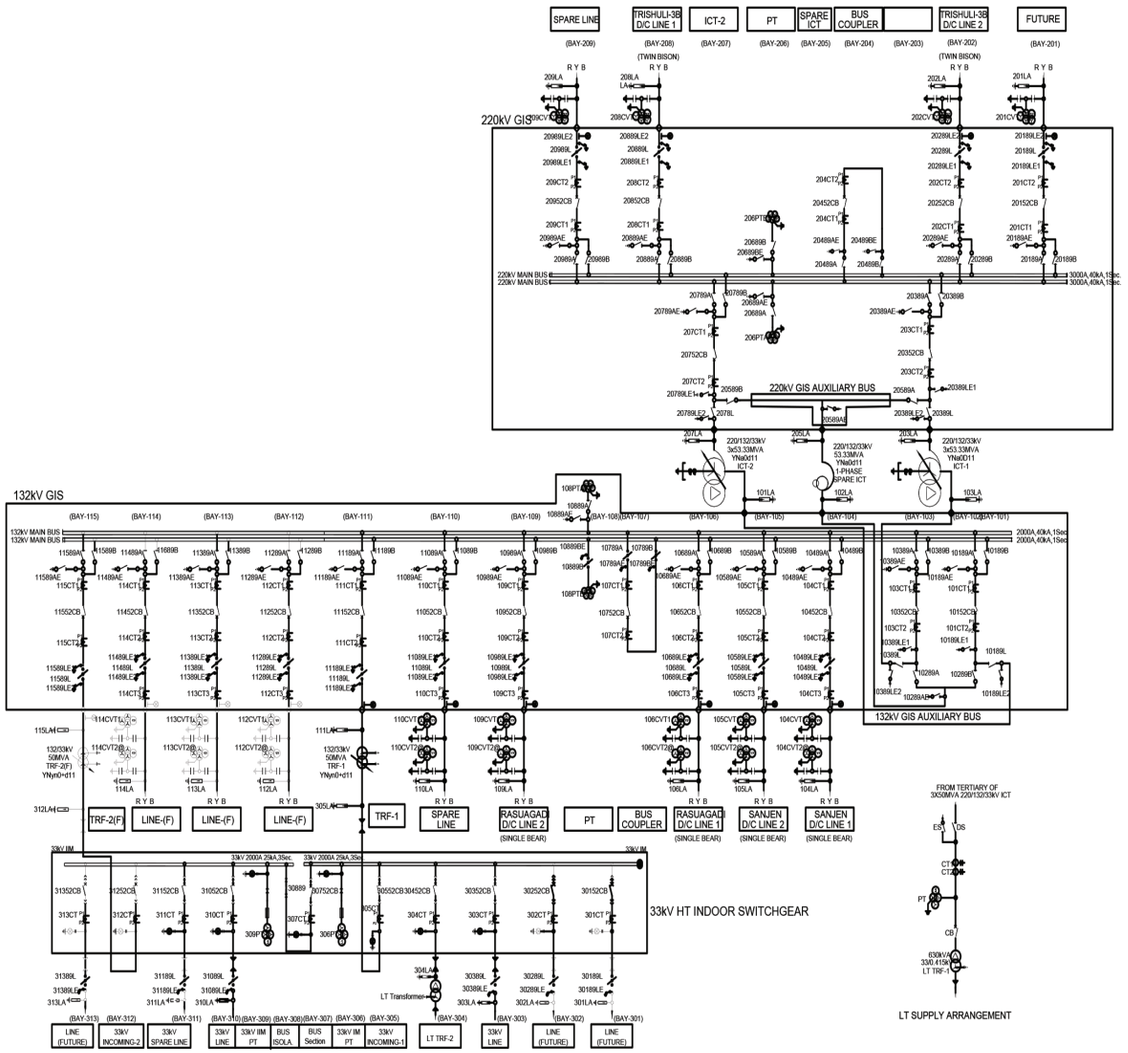
Syaule substation is located at Syaule of Dadeldhura District, Mahakali Zone, feeds power to Budar, Doti, Bagarkot, Dadeldhura, Bhatkanda, Doti Ghatal and Sakayal area. This Substation was built Between the Existing Chamelia Attaria 132 KV Single circuit line. This Substation was commissioned in 2018 with 132/33kV, 30MVA capacity and 33/11, 6/8 MVA.



83. CHILIME HUB 220/132/33 KV SUBSTATION

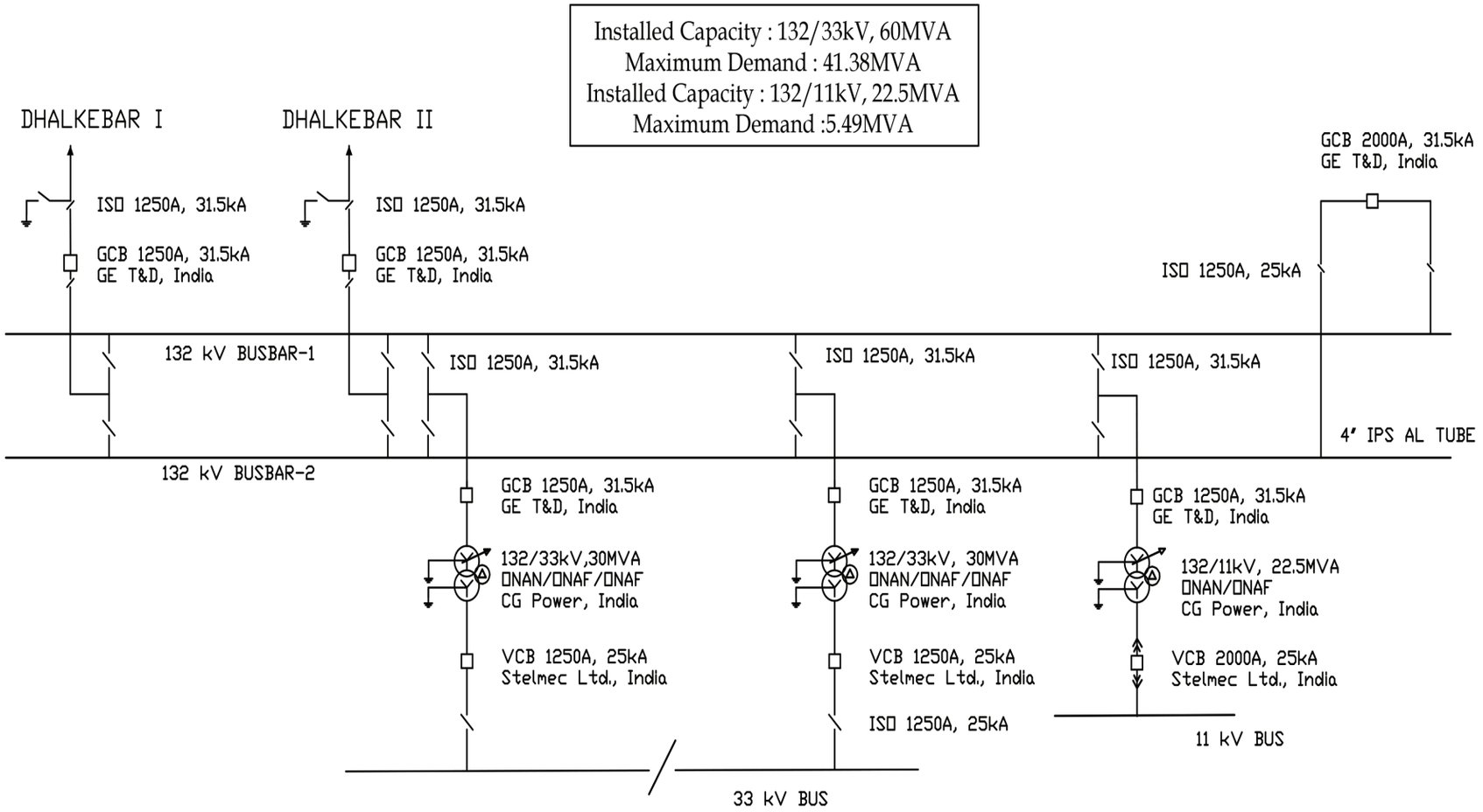
220/132/33kV Chilime Hub New GIS substation with Double Bus GIS Switchgear System in 220kV, & in 132kV, and Single Main & Transfer (SMT) System in 33 KV located at Aamachodingmo-4, Chilime of Rasuwa district of Bagmati Province is connected to Trishuli 3B Hub 220kV Hybrid Substation, Nuwakot. Chilime Hub Substation evacuate Power from Hydropower at Chilime River Basin and Bhote Koshi River Basin. This substation was commissioned in 2024AD with Seven (6+1) 220/132kV/33kV single phase transformer to form two banks each of 160MVA and one number of 132/33kV, 50MVA transformer.

Installed Capacity : 220/132, 320MVA & 132/33kV, 50 MVA



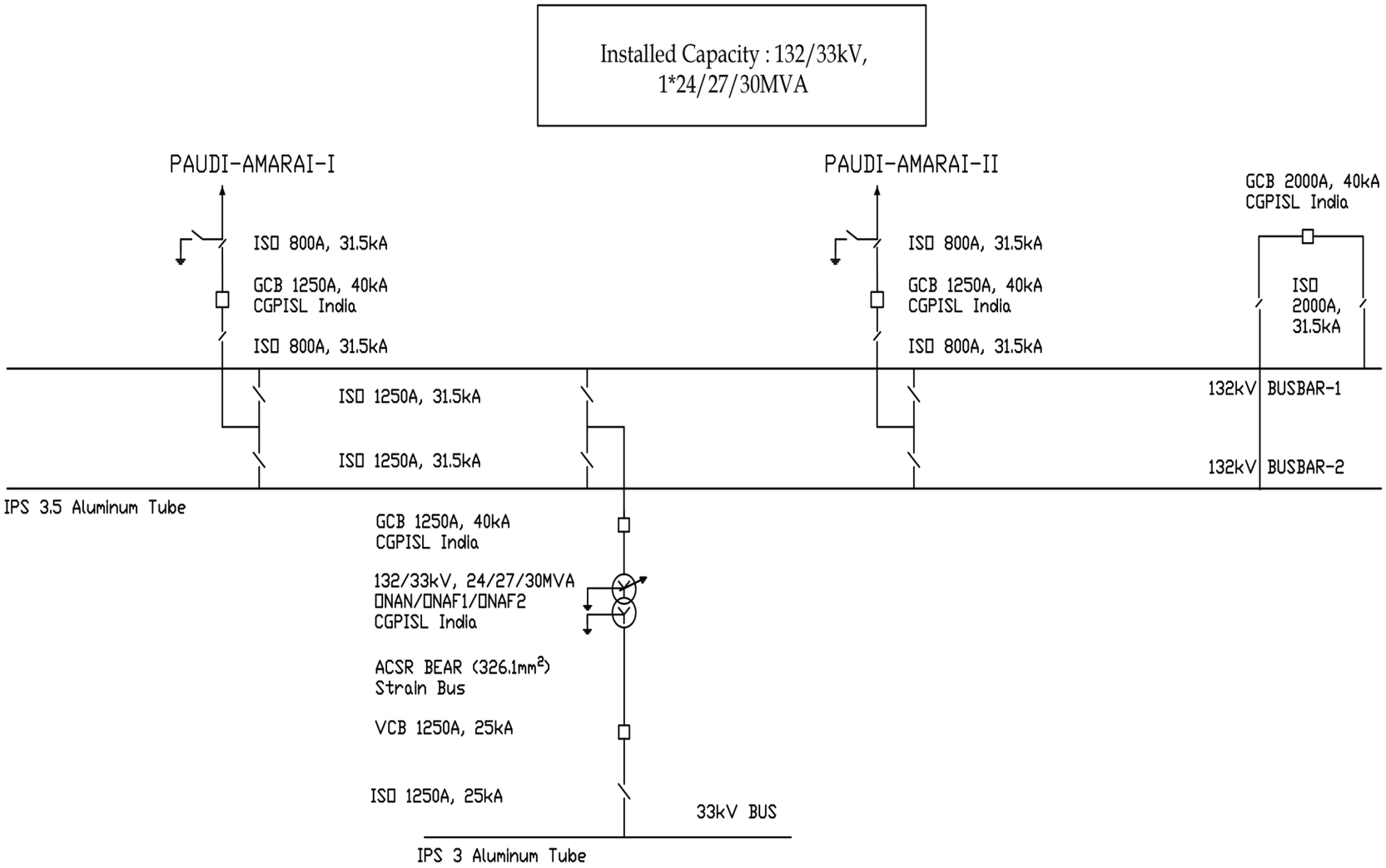
84. LOHARPATTI SUBSTATION

Loharpatti 132/33/11 kV Substation with Double Busbar System located at Mohattari district, improves the electricity supply system in Dhanusha and Mahottari districts, manage the increasing electricity demand and make the electricity supply system reliable and qualitative. After the start of power supply from the substation, about 150,000 customers mainly under Janakpur, Jaleshwor, Gaushala and Yadukuwa distribution centres are benefited.



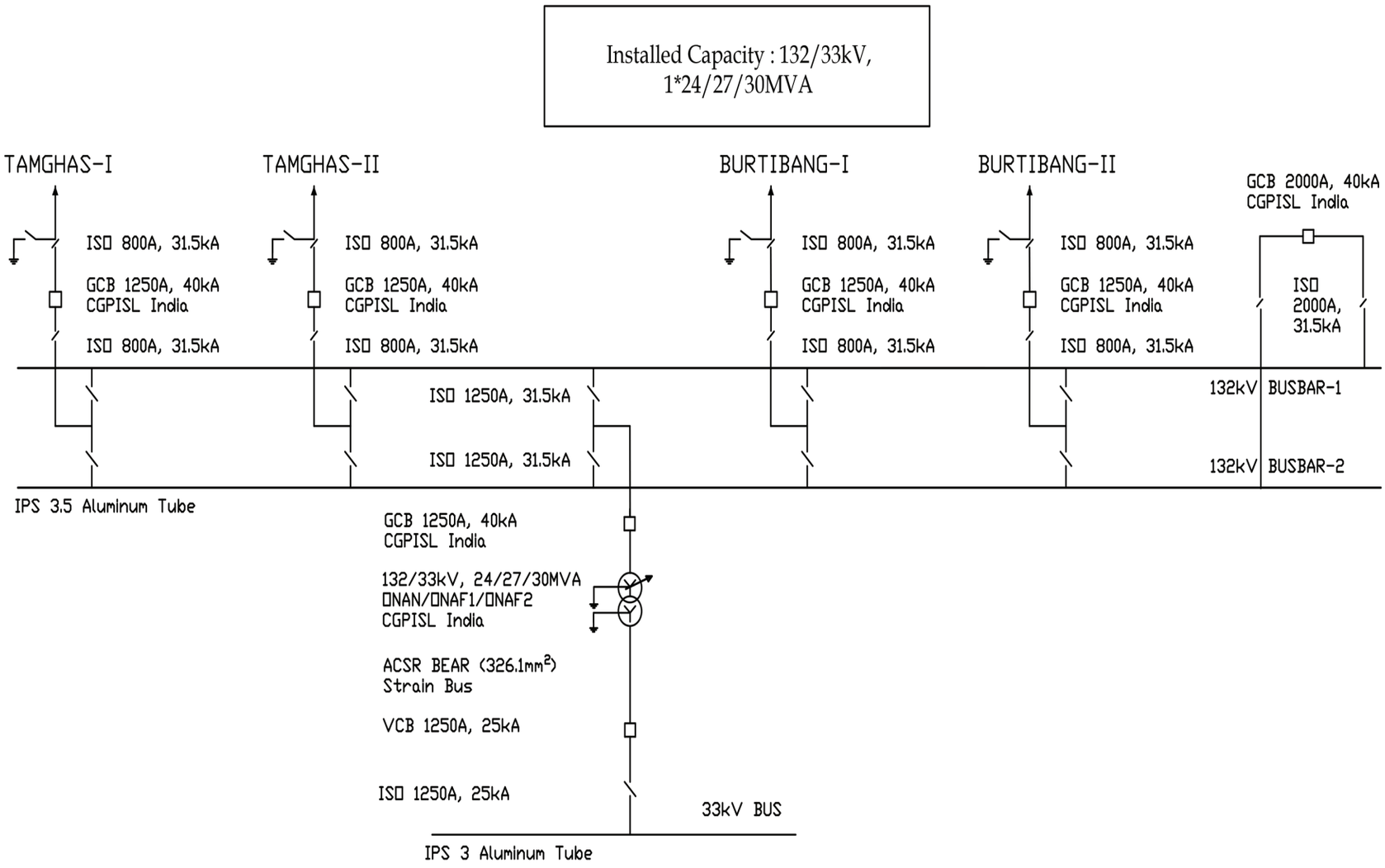
85. Burtibang 132/33/11 kV SUBSTATION

Burtibang Substation with 132kV Double Bus system is located at Baglung, Dhorpatan-2, Rinambeshi. This substation was constructed to extend the national grid to the western Baglung and upgrade the power quality and reliability of the electricity in the region. Burtibang substation is linked to Paudi-Amarai substation in the south-east and also connects the power from Bhim Khola Hydro Power in 33kV level. The substation is also designed to distribute the power from three 33kV feeders and three 11 kV feeders.



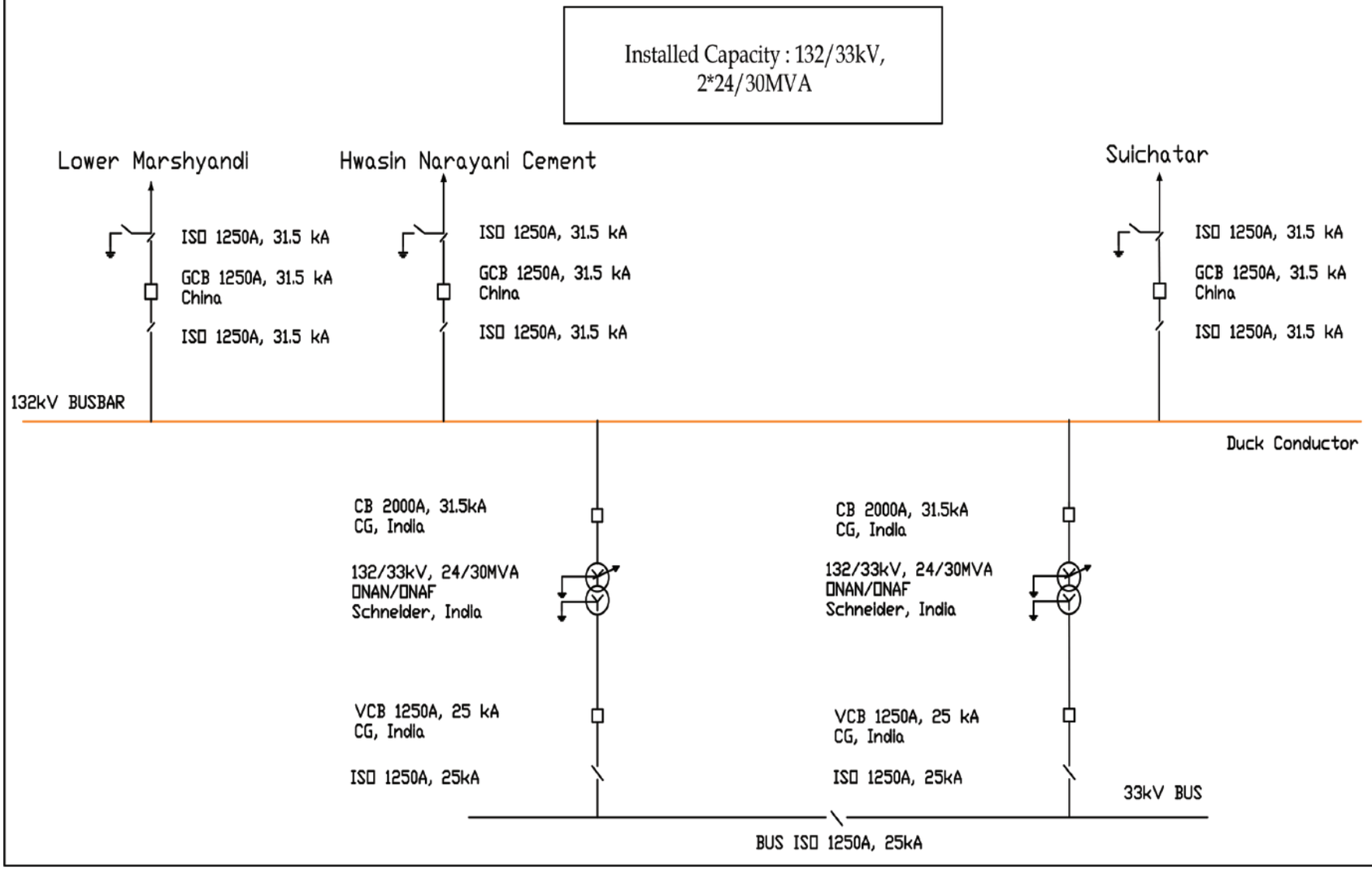
86. Paudi-Amarai 132/33/11 kV SUBSTATION

Paudi-Amarai Substation with Double Bus System located at Gulmi, Musikot-1 Arewa and is the second substation with 132kV voltage class of the district. This substation was constructed to upgrade the power quality and reliability of the electricity in Gulmi district as well as to evacuate the power from under constuction IPPs. Paudi-Amarai substation is linked to Tamghas substation in the south-east and Burtibang substation in the north-west. The substation is also designed to distribute the power from three 33kV feeders and three 11 kV feeders.



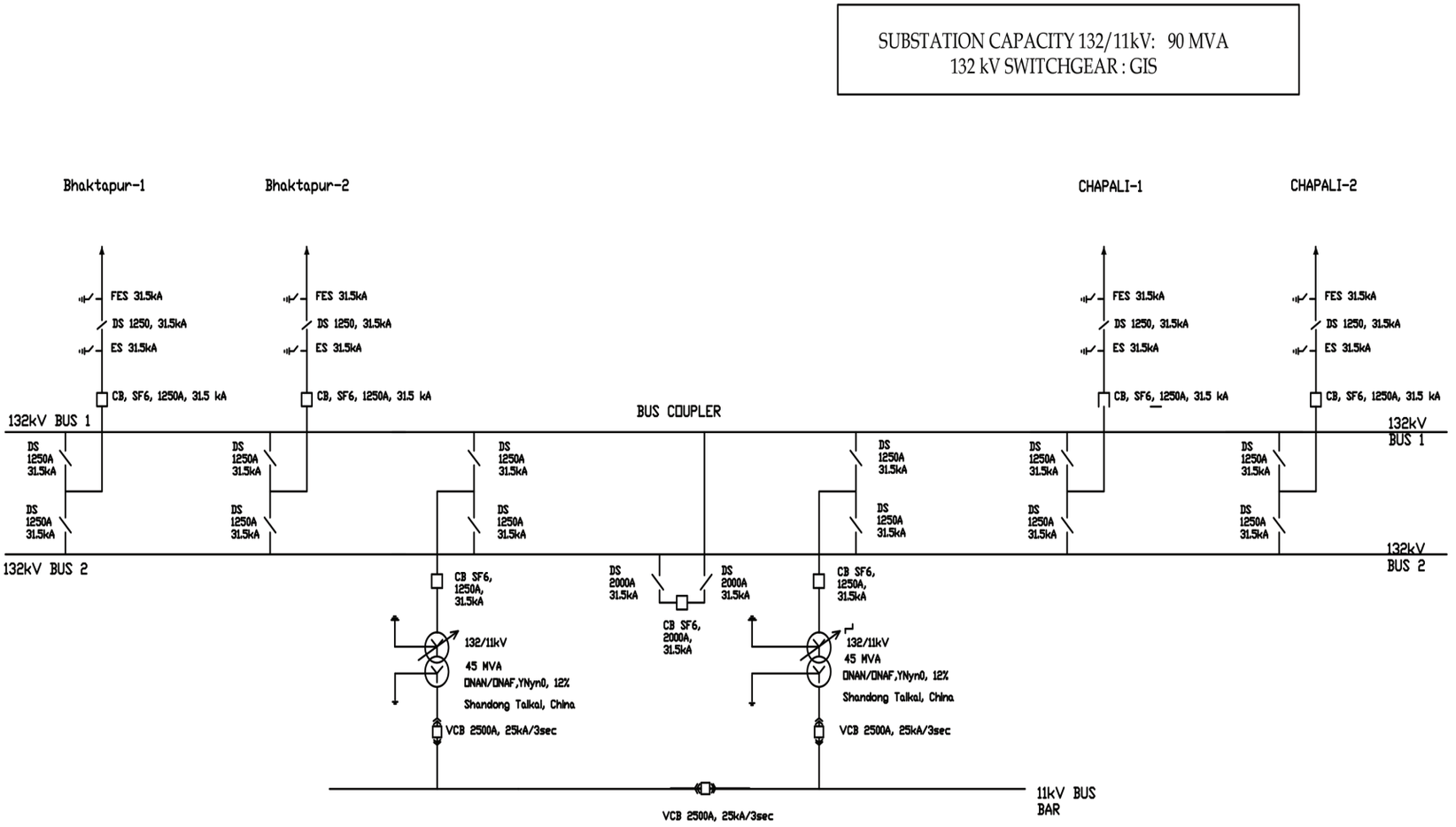
87.MALEKHU 132/33 kV SUBSTATION

Malekhu Substation with Single Bus System located at Siddhalekh RM-6, Dhading, supplies power in 132 kV voltage level to Hwasin Narayani Cement Pvt. Ltd. via LILO arrangement of existing Lower Marshyandi-Suichatar 132 kV Transmission Line. This substation also feeds power to existing Dhadingbesi, Salyantar and Jahare 33 kV substations from four 33 kV feeders and 1 spare 33 kV feeder is provided for future connections.



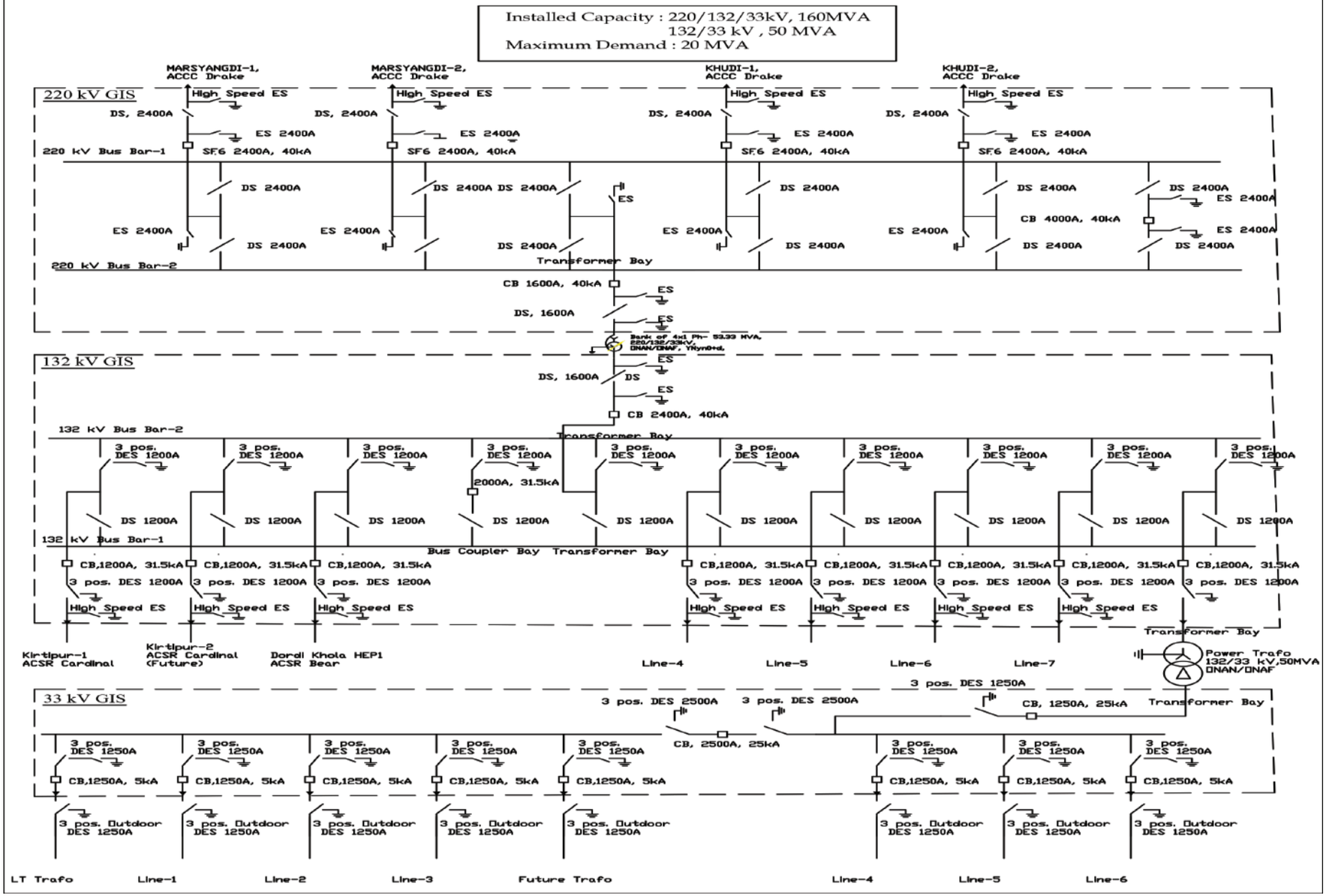
88.MULPANI SUBSTATION

Mulpani Substation is located in Kageshwori Manohara Municipality: 6, Baba Chowk, Mulpani of Kathmandu District. Substation is built in the RoW of existing Bhaktapur- Chapali 132kV Double Circuit Line. Mulpani Substation is GIS Substation with double bus bar system consisting of 4 Line Bays, 2 Transformer Bays and 1 Bus Coupler Bays with additional PT bays for each bus. Substation also consist of 2 units of three phase 132/11 kV, 45 MVA Power Transformer.



89. UDIPUR SUBSTATION

Udipur substation is a GIS substation with double bus bar system. This Substation is located at Udipur of Lamjung district in Gandaki Province. It receive powers from IPP hydropowers of Marsyangdi Basin and is connected to Khudi Substation and Markichowk Substation via 220 kV lines and Kirtipur substation via 132 kV line. It also feed Existing 33 kV Udipur distribution substation of Lamjung district. This substation has one ICT bay of capacity 160 MVA with 220/132/33 kV transformer and 4 line bays at 220 kV voltage level, 50 MVA, 132/33 kV power transformer and 7 line bay at 132 kV voltage level and 2 transformer bay and 6 line bay at 33 kV voltage level. This substation was charged at 132 kV on 19th September 2024. 220 kV transformer and line bays are also charged but on no load.



POWER DEVELOPMENT MAP OF NEPAL

EXISTING / UNDER CONSTRUCTION TRANSMISSION LINES / SUBSTATIONS

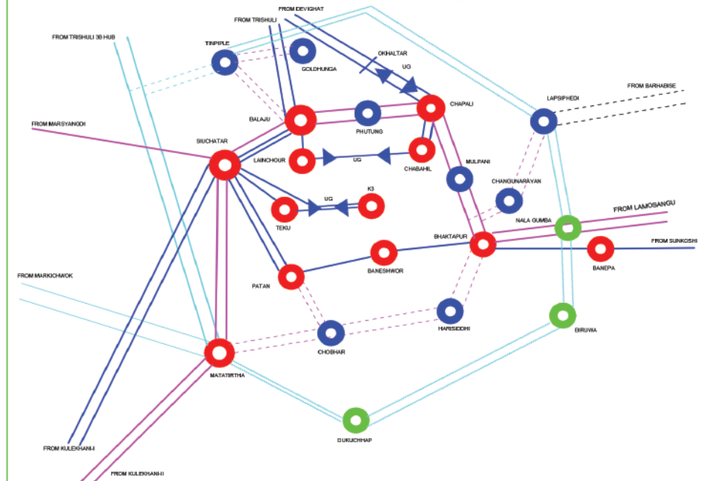
(NOT TO SCALE)

N

CHINA

INDIA

220,132 and 66 kV Network Feeding Kathmandu Valley



LEGENDS

EXISTING	UNDER-CONST.	PLANNED	
———	- - - - -	~~~~~	400 kV TRANSMISSION LINE
———	- - - - -	~~~~~	220 kV TRANSMISSION LINE
———	- - - - -	~~~~~	132 kV TRANSMISSION LINE
———			66 kV TRANSMISSION LINE
○	○	○	GRID SUB-STATION

NEPAL ELECTRICITY AUTHORITY
TRANSMISSION DIRECTORATE
MEDIUM VOLTAGE GRID DEVELOPMENT DEPARTMENT

(Revised Date: JULY 2025)

INTEGRATED NEPAL POWER SYSTEM

(Existing & Under Construction Transmission Line Projects)

Legend:

Existing	Under Construction	Voltage Level
———	- - - - -	400kV
———	- - - - -	220kV
———	- - - - -	132kV
———	- - - - -	66kV
———	- - - - -	33kV

132kV Substation

220kV Substation

400kV Substation

NEA's Power Plant

IPP's Power Plant

Khimti HEP

Upper Tamakoshi

New Khimti

Garjyang

Bhotekoshi HEP

Singati

Lamosangu

Lapsiphedi

Barhabise

Baleli

Indrawati HEP

Indrawati

Sunkoshi HEP

Changunarayan

Bhaktapur

Banepa

Panchkhal

Chilime HEP

Chilime

Trishuli 3A

Samundratar

Trishuli 3B HUB

Trishuli HEP

Devighat HEP

Okhaltar

Chapali

Chabahil

Mulpani

Lainchour

Balaju

Patan

Baneshwor

Dharapani

Kritipur

Kudi

Udipur

From Tanakpur

Mahendranagar

Attariya

Pahalmanpur

Lamki

Bhurigaon

Kohalpur

Nepalgunj

Nanpara (India)

Chameliya HEP

Syaule

Kalikot

Jumla

Dailekh

Surkhet

Kusum

Nalsing Gadh

Bafikot

Madichaur

Jhimruk HEP

Hapure

Ghorahi

Lamahi

Dada Khet

Dana

Rahughat

Lower Modi HEP

Modi HEP

New Modi

Kusma

Burtibang

Paudi Amral

Tamghash

Sandikharka

Shivapur

Motipur

Butwal

Pokhara

Lahachwok

Upper Marsangdi-A HEP

Birauta

Lekhnath

Syangja

Ridi

Mid. Marsyangdi HEP

Damauli

KG-A HEP

Marsyangdi HEP

Siuchatar

Matatirtha

Teku

K-3

KL-II HEP

KL-I HEP

KL-III HEP

Bagmati

Purbi Chitawan

Kawasoti

Gaidakot

Meghauli

(New & Old Bharatpur)

Sardi (Hongsi Cement)

Dumkibas

Bardghat

Dhaubadi

Gandak

Gandak HEP

From Balmikinagar

Sunawal

Hakkui

Mainahiya

Sampatiya (India)

Gorakhpur

(New & Old Hetauda)

Amlekhgunj

Simra

Kamane

Auraha

Pokhariya

Parwanipur

Birgunj

Parsauni

From Raxual

Nijgadh

Pathlaiya

Cha-pur

Nawalpur

Sukhdev chauk

Salimpur

Harniya

Dhalkebar

From Muzzaffarpur

Tingla

Sitalpati

Tumlingtar

Dhungesangu

Kabeli

Kabeli HEP

Phidim

Mai Khola

Puwa HEP

Mai Cascade

Anarmani

Basantapur

Dharan

Baneshwor

Inaruwa

Godak

Damak

Keraun

New Anarmani

Mirchaiya

Balganga

Loharpatti

Lahan

Sukhipur

Rupani

Bodebarsain

Kushaha

Duhabi

Biratnagar

Multifuel DP

From Kataiya

South Corridor

NEPAL ELECTRICITY AUTHORITY

TRANSMISSION DIRECTORATE

MEDIUM VOLTAGE GRID DEVELOPMENT DEVELOPMENT

(Revised Date: JULY 2025)

220/132 kV Matatirtha Substation

A section of Chilime-Trishuli 220 kV Transmission Line

Udipur- Bharatpur 220 kV Transmission Line

NEPAL ELECTRICITY AUTHORITY

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Email: transmission@nea.org.np
Website: www.nea.org.np

NEPAL ELECTRICITY AUTHORITY

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Website: www.nea.org.np