Sunkoshi Marin Diversion Multipurpose Project (SMDMP)

Salient Features

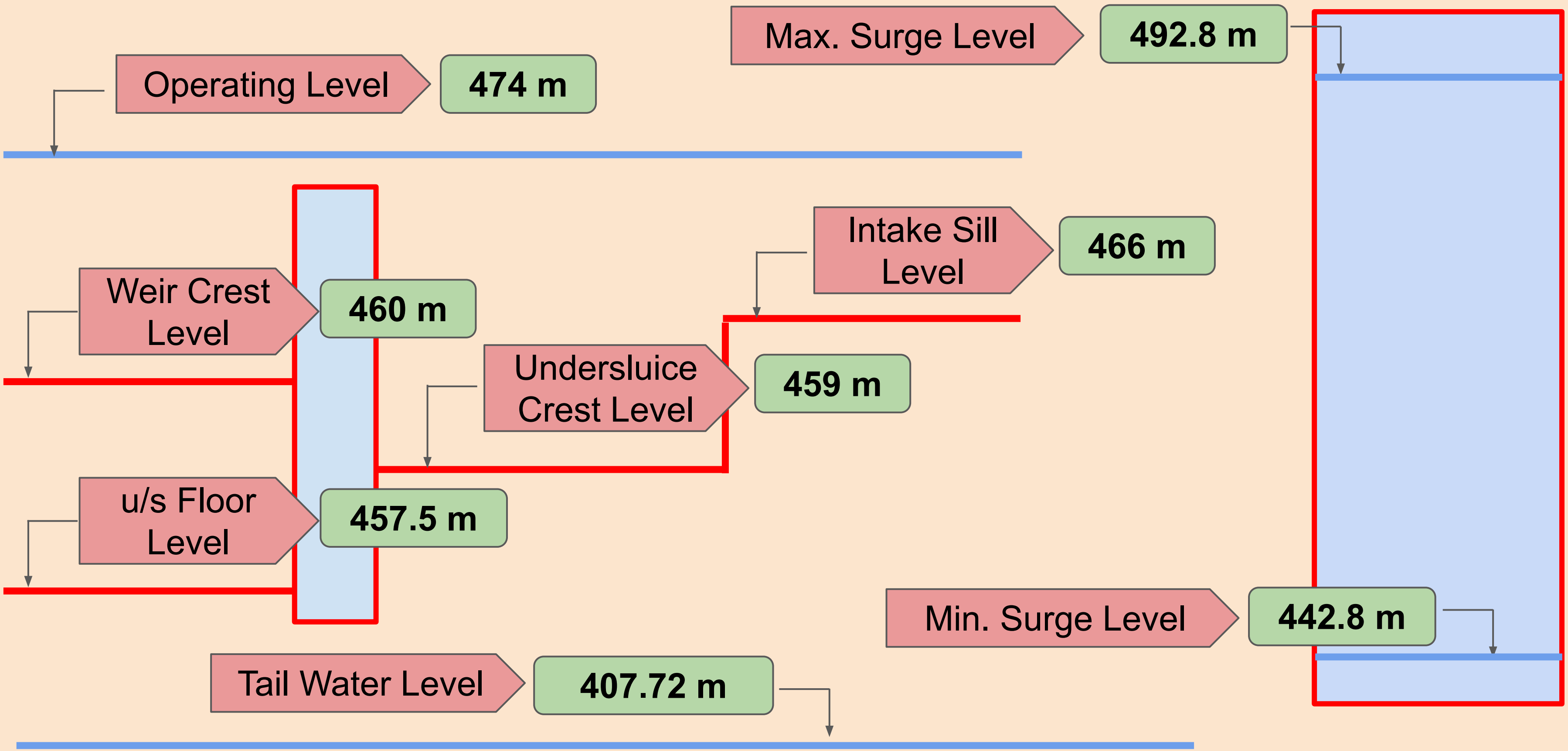
Key Features of the Project

आयोजनाको अवधि	आ.व. २०७६/७७ -२०८५/८६ खरीद गुरुयोजना (अद्यावधिक -०१)
आयोजनाको कुल लागतः	रु. ४९ अर्ब ४२ करोड ३१ लाख १८ हजार खरीद गुरुयोजना (अद्यावधिक -०१)
आयोजना कार्यान्वयन हुने क्षेत्र (प्रदेश, जिल्ला)	बागमती प्रदेशको सिंधुली, रामेछाप जिल्ला मधेश प्रदेशको बारा, रौतहत, सर्लाही, महोत्तरी, धनुषा जिल्ला
बिजुलीबाट राजश्व संकलन	वार्षिक १.५५ अर्ब

आयोजनाका प्रमुख क्रियाकलापहरूः

१	हेडवर्क्स, इन्टेक, डिसिल्टिङ बेसिन, सर्ज शाफ्ट, पावर हाउस लगायतका निर्माण कार्य, पेनस्टक, हाइड्रोमेकानिकल निर्माण तथा जडान कार्य, लोकमार्ग Relocation, अफिस निर्माण लगायत अन्य सिभिल कार्य
२	हेडरेस टनेल, लोकमार्ग Relocation, लगायत अन्य सिभिल कार्य
३	इलेक्ट्रोमेकानिकल निर्माण तथा जडान कार्य
४	ट्रान्समिसन लाईन निर्माण कार्य
५	नदी नियन्त्रण कार्य(मरिन, सुनकोशी तथा तामाकोशी नदी नियन्त्रण कार्य)
६	अध्ययन/अनुसन्धान तथा परामर्श सेवा
७	विविध कार्यहरु

Design Levels



Design Lengths

Dam Top	**158 m**
Weir	**110 m**
Undersluice	**24 m**
Fish Ladder *(With Width)*	**150m (x 10m)**
Desander Chamber *(With Width)*	**115m (x 24m)**
Power Conduit	**131 m**
Headrace Tunnel	**13.3 Km**
Penstock	**106 m**
Tailrace	**105 m**
Transmission Line	**44 Km**

Design Discharges

Flood at H/W (1 in 1000 yrs)	**12,328 m^3/s**
Flood Capacity of Weir	**10,058 m^3/s**
Flood Capacity of Undersluice	**2,270 m^3/s**
Fish Ladder	**4.25 m^3/s**
Min. Monthly Discharge at River	**85.8 m^3/s**
Intake	**73.7 m^3/s**
Design Discharge	**67 m^3/s**

Gate size and number

Weir Gate	**15m x 15m & 6 no.**
Undersluice Gate	**10m x 16m & 2 no.**
Intake Gate	**4m x 7m & 4 no.**

Bed Slopes

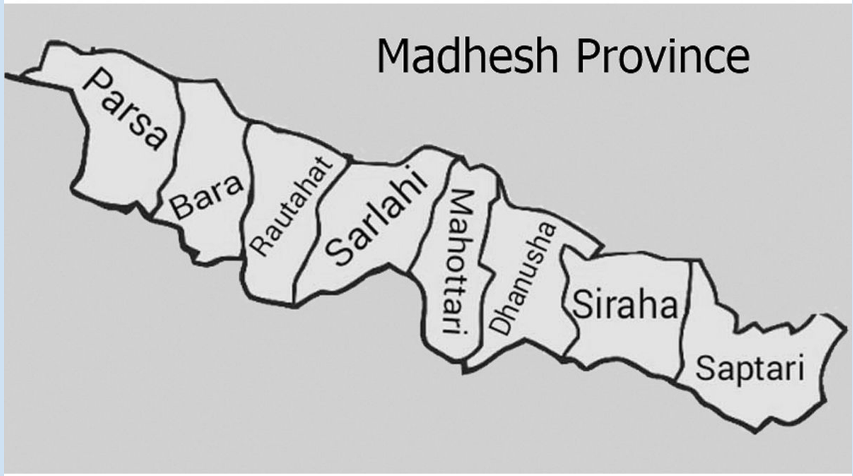
Desandar Chamber	**1:120**
Tailrace	**1:1000**

Irrigated Command Area

Total	**1,22,000 ha**
Existing	**45,600 ha**
Extension	**76,400 ha**

Districts in Command Area

Total no.	**5**
Districts	**Bara, Rautahat, Sarlahi, Mahottari & Dhanusha**



Contract Data

Consultant: **JV of SMEC-EMAY-JADE-CMS** in association with **ECOCODE**

- Contract No.: **DWRI/SMDMP/CS-01/2076-77**
- Contract Name: **Contract Management and Related Works for Construction of Sunkoshi Marin Diversion Multipurpose Project**
- Contract amount:
- Time of completion of services: **75 months (6.25 yrs)**
- Commencement date: **19.05.2022**
- Finalization date:

Contract Data *Contd…*

Contractor 1: **M/S China Overseas Engineering Group Co., Ltd., China**

- Contract No. **Civil01/HRT/SMDMP/2077-78**
- Contract name: **Construction of Headrace Tunnel and Associated Structures for Sunkoshi Marin Diversion Multipurpose Project**
- Contract amount: **(US$ 96,116,489.38 approx.)**
- Commencement date: **20.05.2021**
- Contract Duration: **1550 days (4.25 years approx.)**
- Completion date:

Contract Data *Contd…*

Contractor 2: **M/S Patel-Raman Joint Venture**

- Contract No.: **SMDMP/Civil-HM/ICB-02/2078-79**
- Contract Name: **Construction of Civil, Hydro-mechanical Component and Associated Structures of Sunkoshi Marin Diversion Multipurpose Project**
- Contract amount: **including PS and VAT**
- Commencement date: **25.01.2023**
- Contract Duration: **1650 days (4.5 years approx.)**
- Completion date:

Power and Energy

Installed capacity	**31.07 MW**
Total energy generation	**272.15 GWh**
Total wet energy	**136.45 GWh**

Power and Energy *Contd…*

Total dry energy	**135.70 GWh**
Sellable wet energy	**129.63 GWh**
Sellable dry energy	**128.92 GWh**

Hydrology

Catchment Area	**10,155 SqKm**
Minimum monthly discharge	**85.8 m^3/s**
Design discharge	**67 m^3/s at rated head**
Design flood (at H/W)	**12,328 m^3/s (1 in 1000 yrs)**

Diversion Dam

Type of Dam	**Low head, Barrage type**
Location	**950 m d/s of Sunkoshi Tamakoshi confluence**
Dam length at the top	**158 m**

Diversion Weir (Barrage Bay)

Type	**Concrete weir with gates**
Operating level	**EL. 474.00 m**
Crest level	**EL. 460.00 m**
Length of overflow section	**90.0 m**

Diversion Weir (Barrage Bay) *Contd...*

Length of each span	**15.0 m**
Total length	**110 m**
Number of spans	**6 no.**
Design flood discharge capacity of weir	**10,058 m^3/s**

Diversion Weir (Under sluice bay)

Type	**Concrete weir with gates**
Operating level	**EL. 474.00 m**
Crest level	**EL. 459.00 m**
Length of overflow section	**20.0 m**

Diversion Weir (Under sluice bay) *Contd…*

Length of each bay	**10.0 m**
Total length	**24.0 m**
Number of bays	**2 no.**
Design flood discharge capacity of weir	**2270 m^3/s**

Gates: Barrage Bay

Number	**6**
Type	**Radial gate**
Size	**15.0 m x 15.0 m**
Sill level	**EL. 460.0 m**

Gates: Undersluice Bay

Number	**2**
Type	**Radial gate**
Size	**10.0 m x 16.0 m**
Sill level	**EL. 459.0 m**

Fish Ladder

Type	**Ice harbour**
Width	**10.0 m**
Length	**150.0 m**
Design Discharge	**4.25 m^3/s**

Intake

Type	**Side Intake**
Number	**4**
Sill level	**EL. 466.0 m**
Design discharge	**73.7 m^3/s with flushing discharge**

Intake gates

Type	**Vertical lift roller gate**
Number	**4**
Size	**4.0 m x 7.0 m**
Hoist	**Gantry crane**

Desander Chamber

Type (Material)	**RCC**
Shape	**Rectangular**
Number	**2**
Size	**115 m (L) x 24 m (W)**

Desander Chamber *Contd…*

Flow (Type)	**Free Flow**
Bed slope	**1:120**
Depth of flow ($D_{effective}$)	**8.5 m**

Power Conduit

Shape	**Square with chamfer**
Length	**131.0 m**
Size	**5.50 m x 5.50 m**

Headrace Tunnel

Type (Material)	**RCC lined tunnel**
Shape	**Circular**
Size	**5.5 m (finished diameter)**

Headrace Tunnel *Contd…*

Thickness (lining)	**300 mm**
Flow	**Pressure flow**
Length	**13,356.1 m**

Surge Shaft

Type	**Restricted orifice**
Excavation Diameter	**26.0 m**
Wall Thickness	**1.5 ~ 0.5 m**
Internal diameter	**23.0 ~ 25.0 m**

Surge Shaft *Contd…*

Height	**55.0 m**
Max. surge level	**EL. 492.80 masl**
Min. surge level	**EL. 442.80 masl**

Penstocks

Type	**Steel penstock, buried**
No. of penstock	**1**
Internal diameter	**5.0 m**
Total length	**106.0 m**

Powerhouse

Type	**Surface type**
Size of machine hall (outer to outer)	**67.5 m x 28.05 m**
No. of bays	**3 unit bays and one service bay**
No. of generating units and capacity	**4 units of 10.62 MW each**

Tailrace

Length	**105.0 m**
Size and Shape	**8.0 m to 8.6 m, height varies, rectangular**
Bed slope (V:H)	**1:1000**
Tailwater level	**EL. 407.72 m**

Turbines

Type	**Vertical Francis**
Gross head	**66.29 m**
Head loss	**14.16 m**
Rated head	**52.14 m**
Number of units	**4**

Turbines *Contd…*

Rated discharge per unit	**22.33 m^3/s**
Rated speed	**375 rpm**
Efficiency at rated output	**93%**
Rated capacity	**10.62 MW**

Generator

Type	**synchronous**
Rated output	**12.25 MVA**
Rated speed	**375 rpm**
Generator efficiency	**98%**

Transmission Lines

Length	**44 km**
Terminal point	**132 kV substation at Nawalpur**
Type	**132 kV Double Circuit Line**
Transmission efficiency	**99%**

Switchyard

Size (L X B)	**79.9 m x 67.5 m**

Thank You !!