

# **Banpu Power**

## **Biodiversity Review Report 2024**



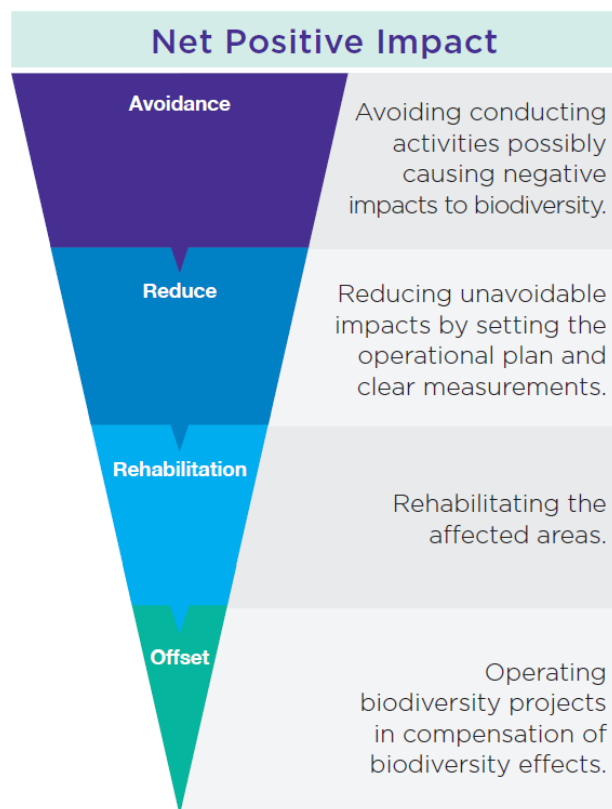
## Introduction

Presently, biodiversity is threatened for many reasons, such as habitat loss, a beyond balance utilization of the biological ecology resources, climate change, threats from invasive alien species and pollutions from human activities, etc., especially those in the areas where high biodiversity is existing. BPP is well aware of the importance of biodiversity and has commitment to conducting the power business with cautions, taking into account the project's potential impacts in order to prevent and reduce the effects to a minimum.

Banpu Power (BPP) has laid down the biodiversity management guidelines by avoiding any impacts since the beginning of selecting operating areas that do not affect the high biodiversity areas. We are committed to conducting biodiversity operations as following:

- Assessing risks related to biodiversity in all business units.
- Conducting a biodiversity study in the project areas possibly having high biodiversity so as to collect data and develop the operational plan to reduce impacts prior to commencing operations.
- Taking into account the biodiversity impacts in all project operations' stages, ranging from the exploration, construction, operation phases to the end of project life cycle.
- None of business units operating in the areas of the World Heritages and in the protected areas of the International Union for Conservation of Nature (IUCN), Category I-IV.
- Committing to operating projects promoting the net positive impact on biodiversity through following guidelines:
- Engaging stakeholders especially the local communities and academic institutions in order to implement the biodiversity conservation projects.
- Supporting in biodiversity research initiatives.

To fulfill the commitment, BPP plan to review it's biodiversity risk at all operational control sites at least once in 2 years.



## Scope of work

The boundary of this report covers the power plants in which BPP has invested more than 50% or has management control, including three combined heat and power (CHP) plants in China and the Temple Combined Cycle Gas Turbine power plant in the U.S.

BPP has invested in various projects, such as thermal power plants, solar power plants, and wind power plants. However, there are only three CHP plants in China where the company has full operational control. Therefore, the biodiversity review report will focus on the three CHP locations and the Temple Combined Cycle Gas Turbine power plant, within a radius of 5 km from each site, as this is approximately the distance within which air emissions from the power plants could create significant adverse impacts on the environment.

CHP	Location	%BPP Share	Production Capacity	Location (Latitude, Longitude)	
Zhengding	Hebei, China	100%	139 MW	LAT 38°09'08"N	LONG 114°35'39"E
Luannan	Hebei, China	100%	227 MW	LAT 39°29'52"N	LONG 118°38'57"E
Zouping	Shandong, China	70%	247 MW	LAT 36°56'36"N	LONG 117°41'59"E
Temple	Texas, The US	50%	1,500 MW	LAT 31°3'91"N	LONG 97°19'0.45"W

## Methodology

The latest remote sensing picture and secondary information will be used for monitoring changes in land used within radius 5 km. The secondary information available will be used for monitor changes regarding land used in the area related biodiversity protected area.

## Objectives

1. To update the status of land used around BPP operational control sites, focusing on the high potential biodiversity area.
2. To ensure all BPP operational control sites are assessed for biodiversity risks to meet the biodiversity policy commitment.

## Zhengding power plant

- **Location**

Zhengding power plant (ZD) or Shijiazhuang Chengfeng Cogen. Co. Ltd. located in Zhengding County, Hebei, LAT 38°09'08"N and LONG 114°35'39"E. Zhengding County is one of the 16 counties that make up the Shijiazhuang municipality, the provincial capital of the Hebei province.



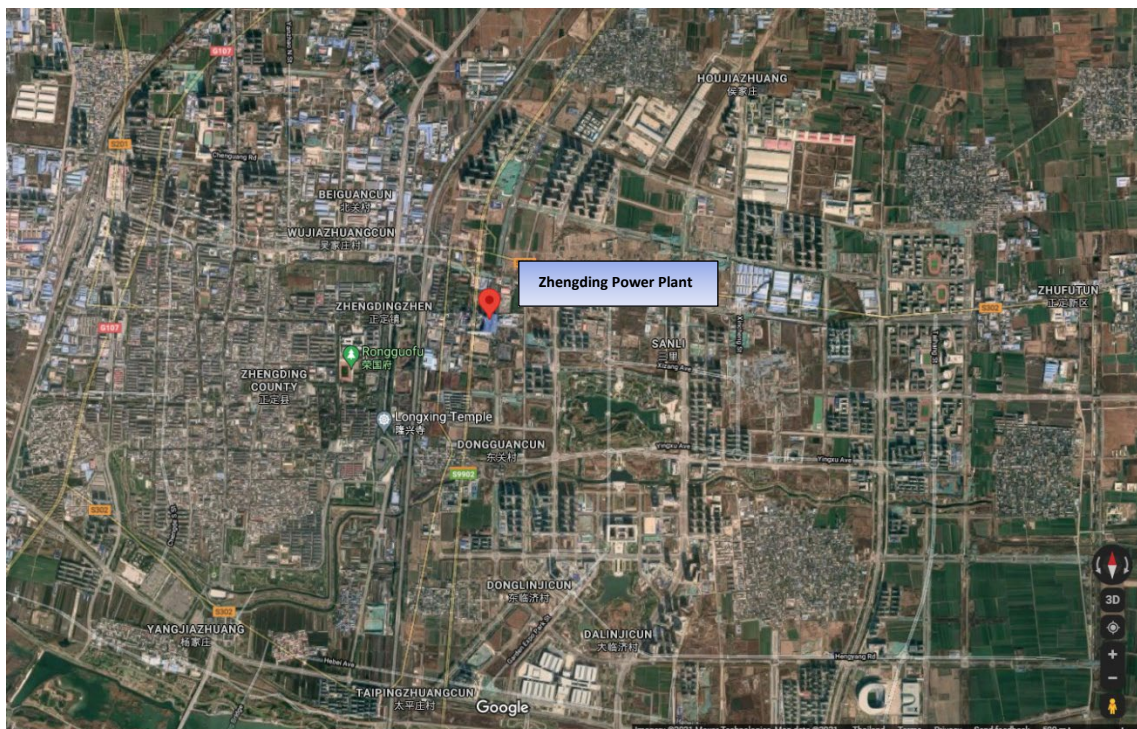
Zhengding County's economy is based on both agricultural and industrial foundations such as chemical, electronics, manufacturing of machinery, food, construction material and textile.

The land used around ZD are urban area including, commercial area and residential area. There are also a few portions of agricultural area, industrial area and cultural tourism area.

ZD is the only one central heat supply center of Zhengding County. the only heat source in ZD, provide steam to industrial users, government buildings, hospitals, hotels and schools etc., and also provide both steam and hot water for central heating during winters.

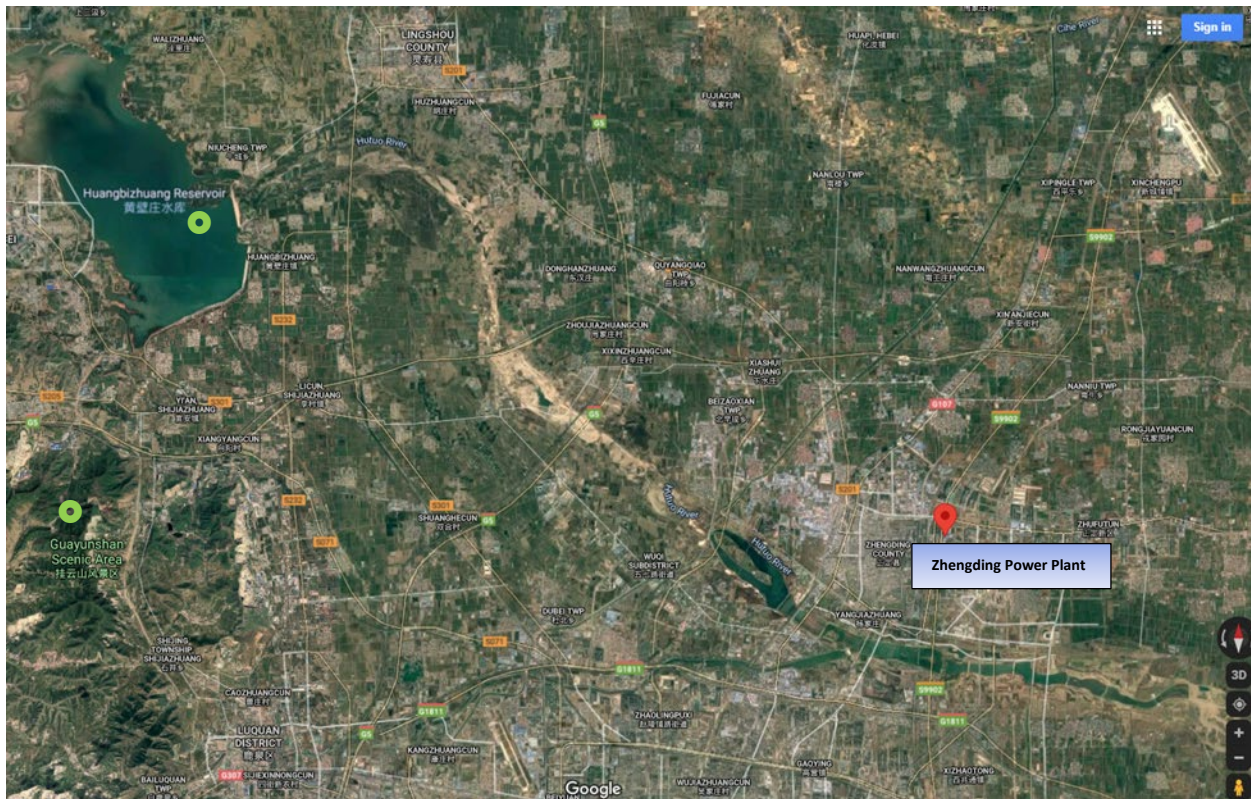
- **Result**

The review result found that there is no high biodiversity area within 5 km around ZD such as national park, World Heritage areas and IUCN category I-IV protected area. The nearest potential biodiversity as follows:





- **Guayun Mountain scenic area (挂云山风景区):** approximate 28 km away from ZD  
Guayun Mountain Scenic Area is located in the west of Shijiazhuang City, 20 km away from Shijiazhuang City. It is a natural scenic area and is known as 'Little Taishan'. It has an area of 5 square kilometers and an altitude of 748 m. Looking to the east is the endless North China Plain and looking to the west is the Taihang peaks of the vast Cangyan. The west peak of Guayun Mountain is called 'Guanri Peak', and it is an excellent place for tourism.
- **Huangbizhuang Reservoir (黄壁庄水库) :** Approximate 26 km away from ZD.  
Huangbizhuang Reservoir is located in Luquan City, Hebei Province, northwest of Shijiazhuang City, about 30 km away from Shijiazhuang City. It is a large water conservancy project that focuses on flood control and takes into account the comprehensive utilization of urban water, irrigation, and power generation. The total storage capacity is 1.210 billion cubic meters.



## 2023 Zhengding power plant air emissions control

Parameter	Standard (mg/ m <sup>3</sup> )	Average (mg/ m <sup>3</sup> )	Total Load (ton)
Nitrogen Oxides (NOx)	30.00	20.03	44.3
Sulfur Oxides (SOx)	25	13.99	23.6
Particulate Matter (PM)	5	1.70	2.5
Mercury (Hg)	0.03	0.01-0.02	0.000

Based on the ultra- low emission of ZD, the surrounding communities and these 2 potential biodiversity sites are not impacted by ZD operations. There is no report/ complaint about the adverse impact on biodiversity and acid rain in this area.

## Luannan power plant

- **Location**

Luannan power plant (LN) located in Luannan County, Tangshan city, Hebei Province, LAT 39°29'52"N, LONG 118°38'57"E. Tangshan is well-known as the center of heavy industries in Northern China for steel & iron manufacturing and power.



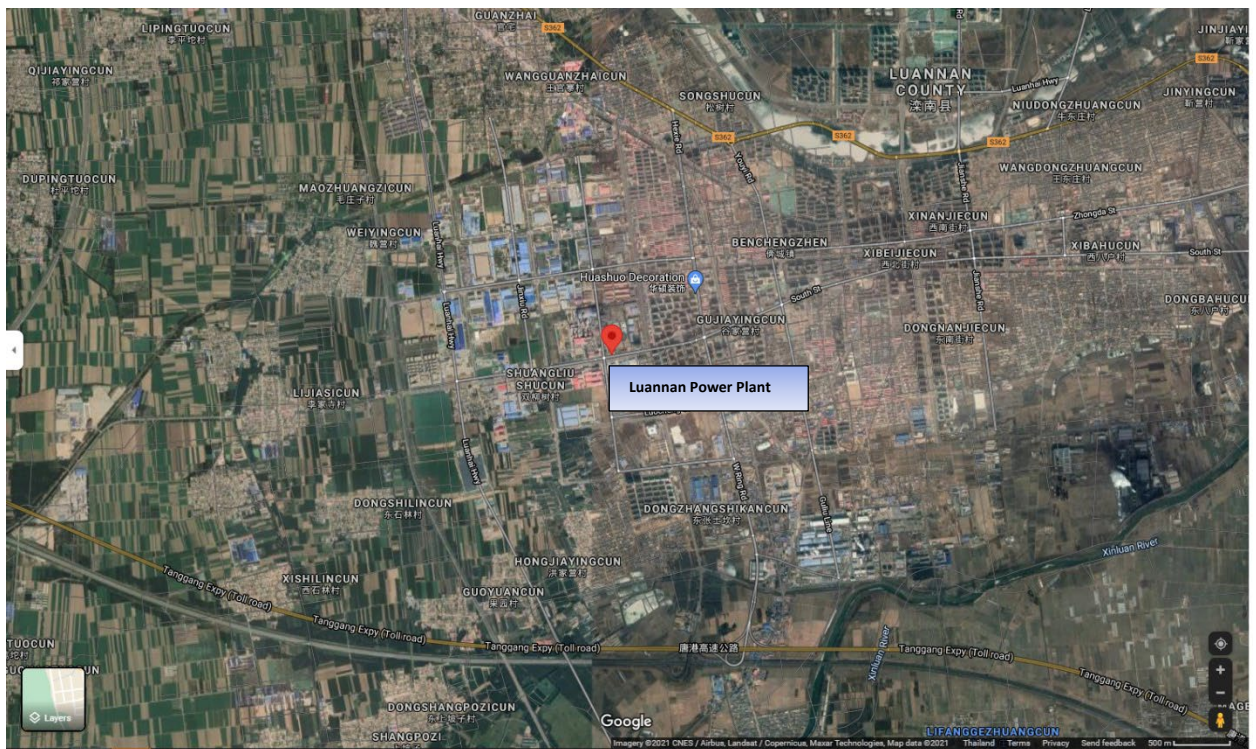
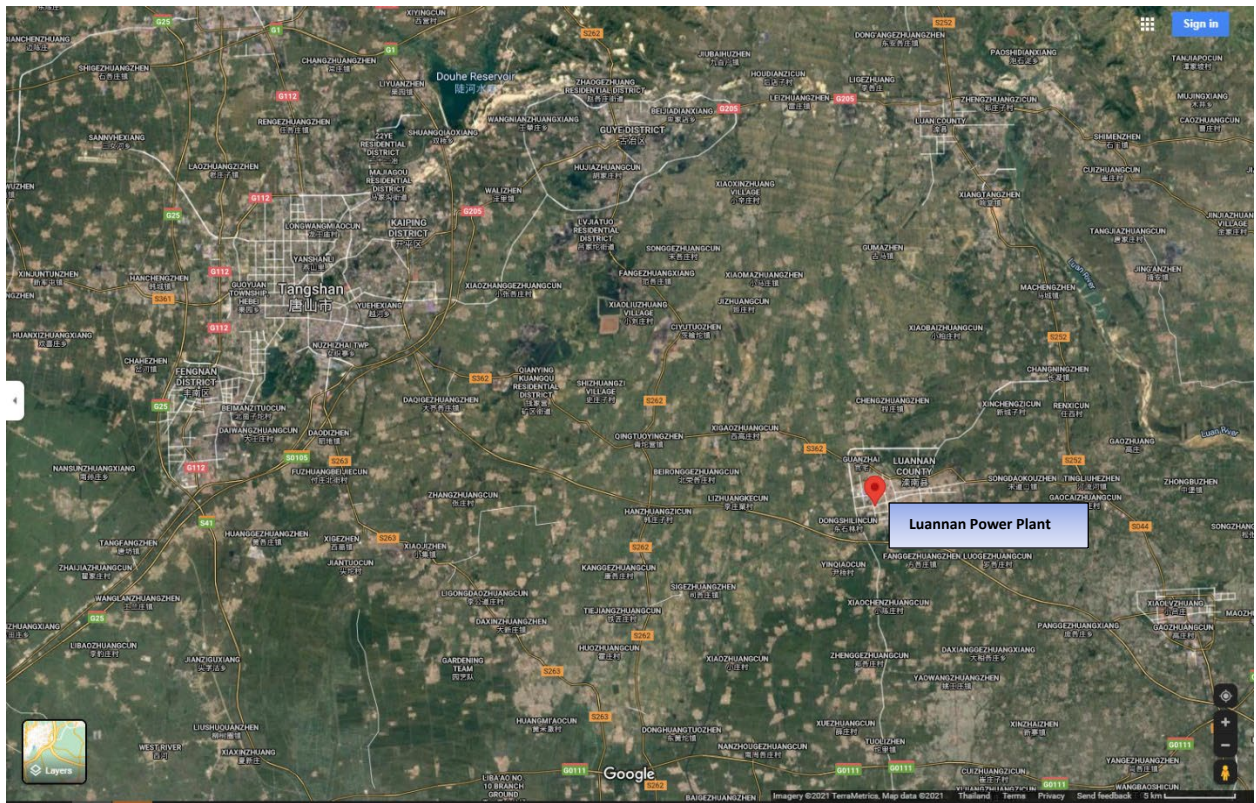
LN is approximately 210 km northeast of Beijing, 100 km from the port cities of Tianjin and Qinhuangdao, and 45 km from the Tangshan urban area. It is about 30 km from Kailuan Coal District, one of the most productive coal mining area in China. LN has supplied electricity to Northern Hebei Province State Grid and supply steam for industrial customers such as paper mill manufacturing, medical supplies manufacturing, dairy manufacturing and also Luannan heat supply center.

As located in urban area, land used around LN are industrial area, residential area and agricultural area.

- **Result**

The review result found that there is no high biodiversity area within 5 km radius around LN such as national park, World Heritage areas and IUCN category I-IV protected area.



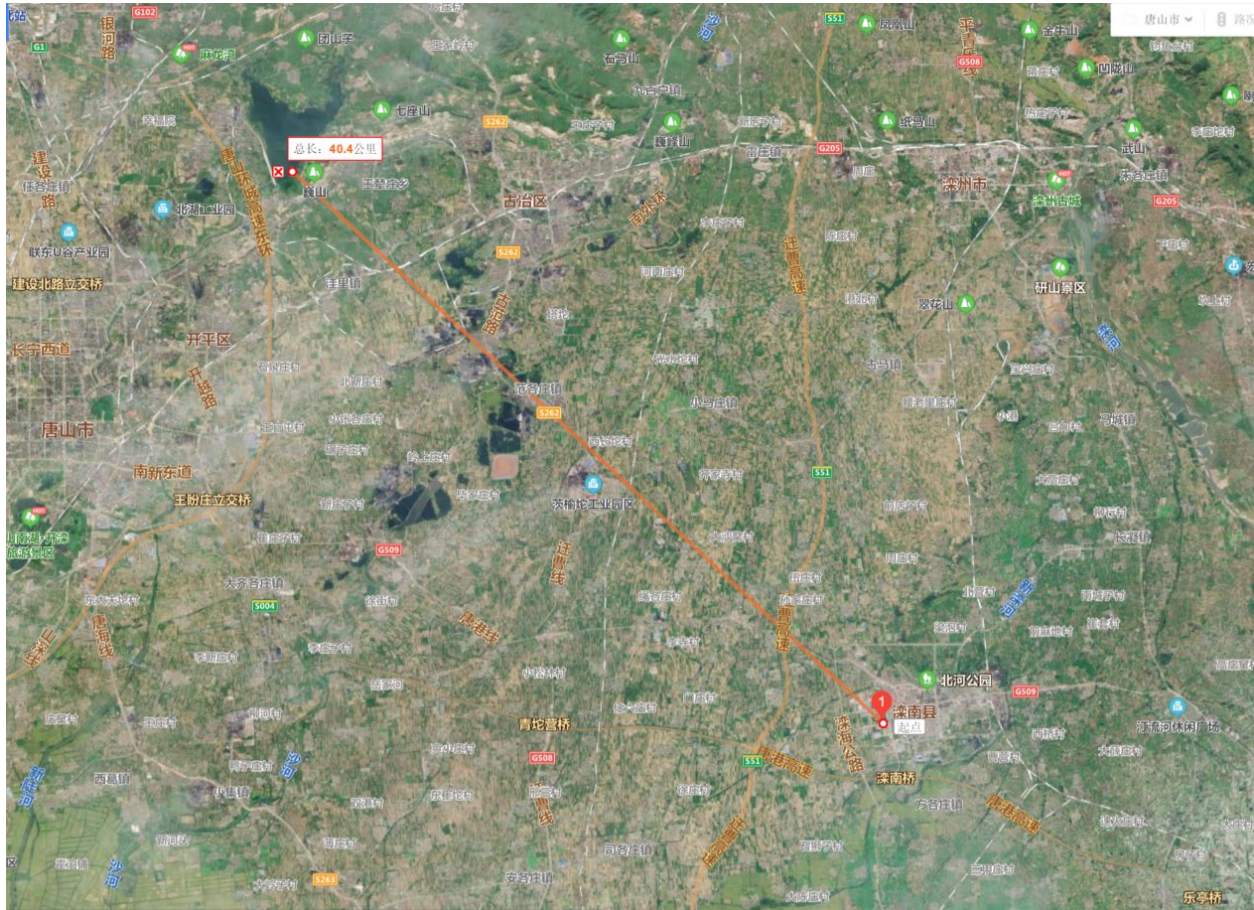




The nearest potential biodiversity as follows:

- **Douhe Reservoir (陡河水库):** approximate 40.4 km away from LN.

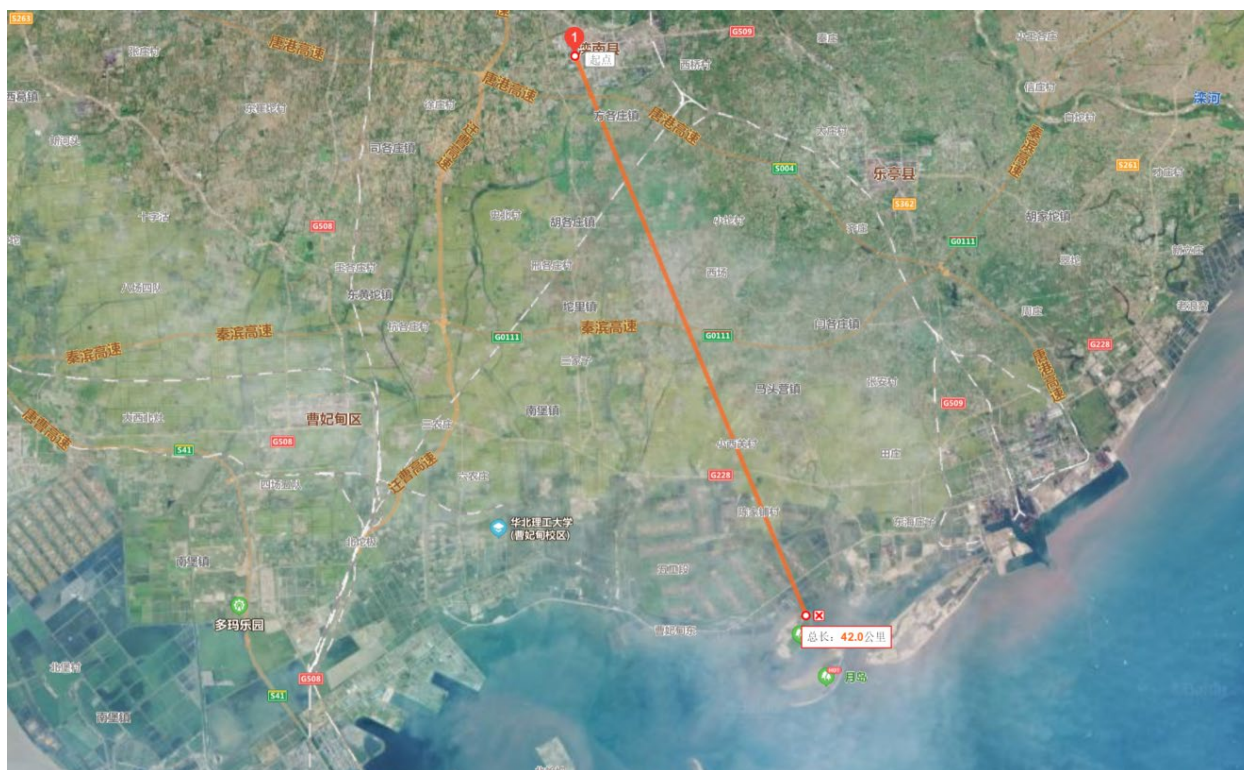
Douhe Reservoir is located at the upper reaches of Douhe River at the southern foot of Yanshan Mountain, 15 km away from Tangshan City and 40.4 km away from LN Power Plant, with a total storage capacity of 510 million cubic meters. It is a large-scale water conservancy project with comprehensive functions such as flood control, water supply, and irrigation.



- **Bodhi Island (菩提岛):** approximate 42 km away from LN.

The Bodhi Island scenic spot has a total area of 4.4 square kilometers, 3 km long from north to south and 1 km wide from east to west. Moreover, it is in the southeast of LN, 42 km away from LN. It is 100 km away from Qinhuangdao City and 90 km away from Beidaihe City. It is the largest island in North China. There are more than 260 kinds of plants on the island, and the natural vegetation coverage rate is over 98%.





#### 2023 Luannan power plant air emission control

Parameter	Standard (mg/ m <sup>3</sup> )	Average (mg/ m <sup>3</sup> )	Total Load (ton)
Nitrogen Oxides (NO <sub>x</sub> )	≤30	21.75	70.7
Sulfur Oxides (SO <sub>x</sub> )	≤25	17.08	57.0
Particulate Matter (PM)	≤5	1.72	5.5
Mercury (Hg)	≤0.03	0.00	0.005

Based on the ultra- low emission of LN, there is no reported on adverse impact from air emission in the surrounding communities and agriculture area.

It was recommended for future study of LN relating to biodiversity could be study the impact on agriculture area from air emissions.

## Zouping power plant

- **Location**

Zouping Peak CHP Co., Ltd. Or Zouping power plant (ZP) is located in Xiwang Industrial Zone, Handian Town, Zouping County, Shandong Province, LAT 36°56'36"N, LONG 117°41'59"E.

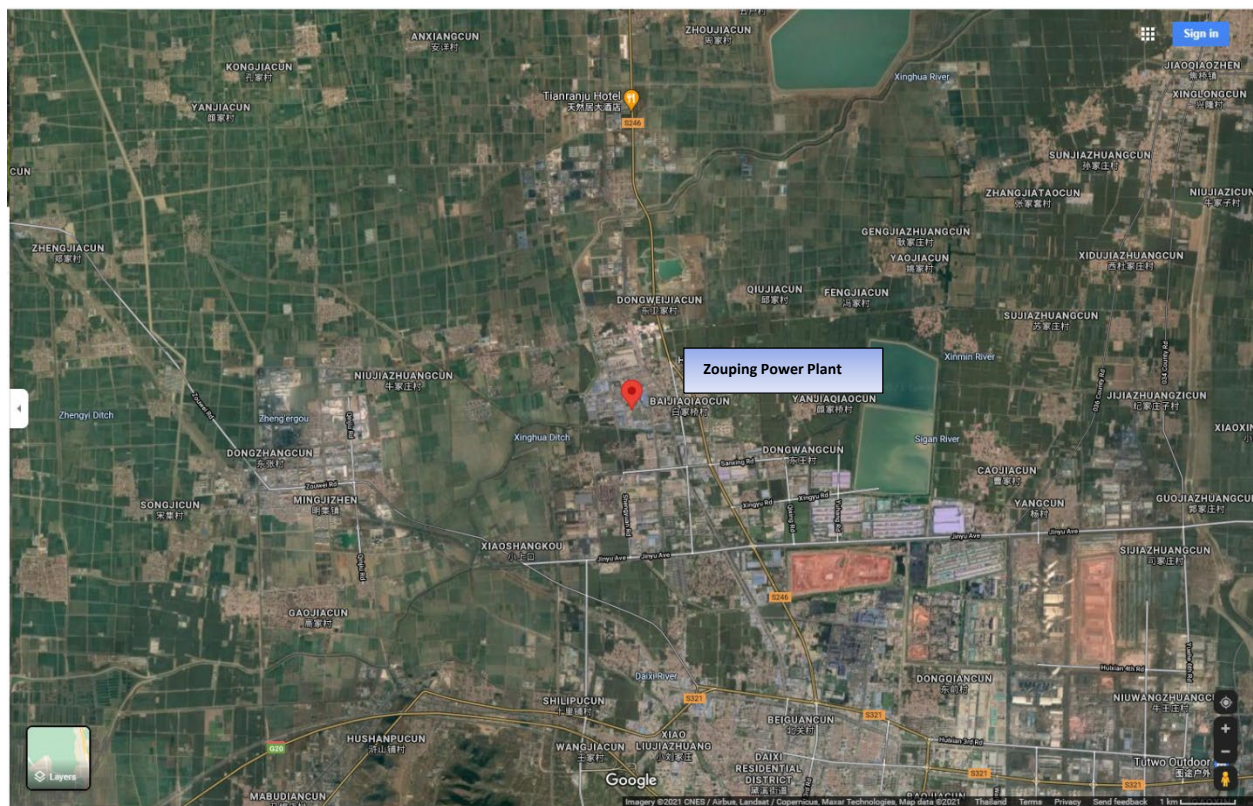


Zouping county was ranked in to 20

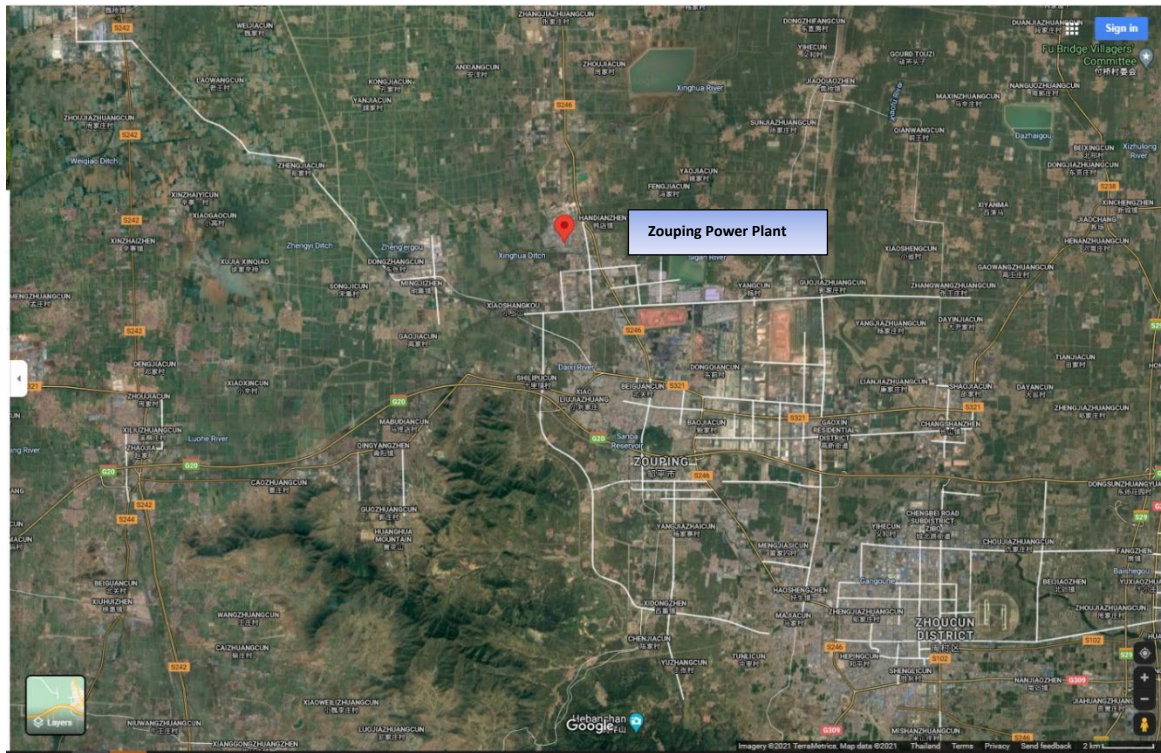
GDP of 137 counties of Shandong province, most of GDP was generate from large enterprises industry. Zouping is about 70 km. east of the capital city of Jinan and is mainly manufacturing and agricultural base.

- **Result**

The review result found that there is no high biodiversity area within 5 km radius around ZP such as national park, World Heritage areas and IUCN category I-IV protected area.



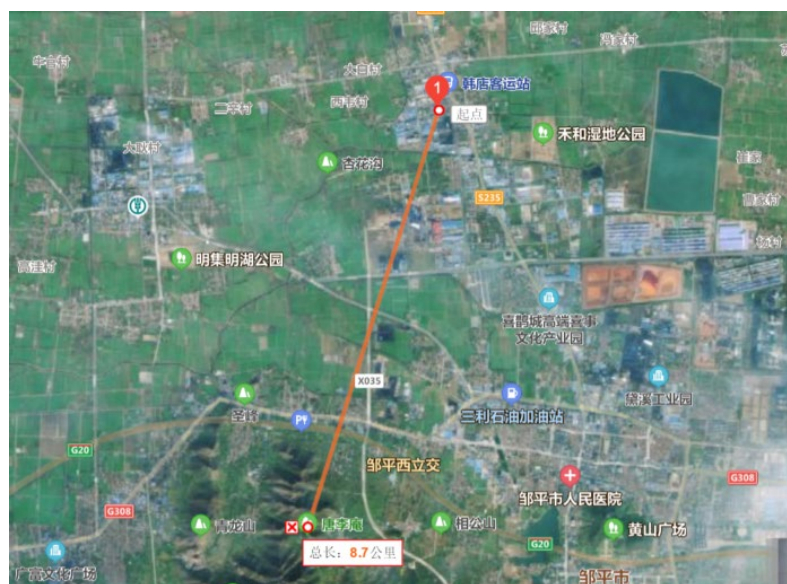




The nearest potential biodiversity as follows:

- **Tang Li'an (唐李庵)** approximate 8.7 km from ZP.

Tang Li'an. It is a key cultural relic protection unit in Binzhou City. Located at the foot of Huixian Mountain, 5 km west of Zouping City. It is 30 km away from Zibo City and less than 50 km away from Jinan city. The famous Buddhist temple was built in the Sui and Tang dynasties. The Tang Li'an Scenic Area occupies an area of 1,338 acres, integrating scenic sightseeing, Buddhist worship, and cultural exploration.



- **Heban Mountain (鹤伴山):** approximate 20 km from ZP.

Heban Mountain Scenic Spot is located in the southern mountainous area of Zouping City, Shandong Province, 30 km away from Zibo City and less than 50 km away from Jinan City. It is a mountain-type natural scenic area, known as ‘the 2<sup>nd</sup> Mount Tai’. Heban Mountain Scenic Area covers an area of 7,200 hectares, with a forest coverage rate of nearly 90%.



## 2023 ZP air emission control

Parameter	Standard (mg/ m <sup>3</sup> )	Average (mg/ m <sup>3</sup> )	Total Load (ton)
Nitrogen Oxides (NOx)	≤50	26.68-33.15	107.1
Sulfur Oxides (SOx)	≤35	9.09-16.38	47.2
Particulate Matter (PM)	≤5	1.20-2.54	6.9
Mercury (Hg)	≤0.03	0.000	0.000

Based on the ultra-low emission of ZP, there is no reported on adverse impact from air emission in the surrounding communities and agriculture area.

It was recommended for future study of ZP relating to biodiversity could be study the impact on agriculture area from air emissions.



## Temple CCGT Power Plant

- **Location**

Temple CCGT power plant consists of an approximately 250 -acre tract of land located at 2892 Panda Drive in Temple, Bell County, Texas, US., LAT 31°3'9168"N, LONG 97°19'0.4548"W.

Temple CCGT power plant is a clean natural gas-fueled, approximately 1,500 -megawatt combined-cycle generating facility. Electricity is



generated on-site using natural gas, which utilize state-of-the-art Combined Cycle Gas Turbines (CCGT) technology, known for their modernity and high efficiency. Exhaust gases are collected and routed to the HRSGs where the heat is used to generate steam. Steam produced in the HRSGs is routed to the steam turbine and electric generators. Water used for steam condensate cooling is derived from the City of Temple and Temple Belton. The remaining portions of the site are largely undeveloped land.

Adjoining properties (from site boundaries) are summarized below

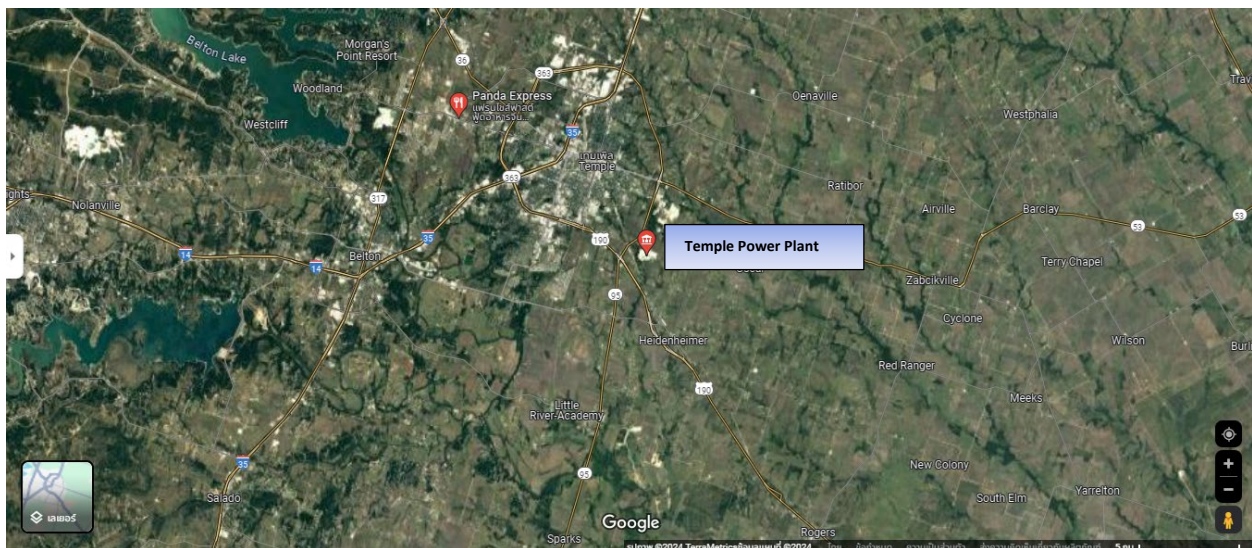
Direction	Description
North	Vacant land and/or agriculture land and a portion of Knob Creek.
East	Vacant land and/or agriculture land.
South	Vacant land and/or agriculture land, a portion of Knob Creek, rural residences and FM3117 highway.
West	Atchison, Topeka and Santa Fe Railroad, BNSF railway and agriculture land.

- **Result**

The site has primarily consisted of vacant land and/or agricultural land, with a portion of a tributary of Knob Creek located in the western section since at least 1943. The northwest corner of the site was developed with ranch/farm residences and ancillary structures from at least 1943 until approximately 1996, when the structures were demolished. A portion of Knob Creek was impacted when the present-day power plant was constructed. The north-adjoining property has also consisted of vacant land and/or agricultural land and a portion of Knob Creek since 1943. The east-adjoining property has been vacant land and/or agricultural land since at least 1943. The south-adjoining property has included vacant land and/or agricultural land, as well as a portion of Knob Creek and FM Road 3117, since at least 1943. The Atchison, Topeka and Santa Fe

Railroad has bordered the site to the west, alongside agricultural land, since at least 1943.

The review result found that there is no high biodiversity area within 5 km radius around Temple Power Plant such as national park, World Heritage areas and IUCN category I-IV protected area.





## 2023 Temple air emission control

Parameter	Intensity (ton/ MWh)	Total Load (ton)
Nitrogen Oxides (NOx)	0.000025	182.16
Sulfur Oxides (SOx)	0.000002	15.24
Particulate Matter (PM)	0.000024	170.29

Based on the ultra-low emission of Temple, there is no complaint about adverse impact from air emissions in the surrounding communities and regulators.

## Conclusion

The Zhengding, Luannan, and Zouping power plants have supplied electricity to the grid and provide steam, hot water, and cool water to industrial customers and central heating centers in urban areas. The Temple CCGT power plant has supplied electricity to ERCOT, an electricity merchant market in Texas. All of these plants are categorized as ultra-low emission power plants. Considering the land used around the site locations and the emissions control of the power plants, there is a low potential for operations to create adverse impacts on the environment.

In 2024, BPP conducted a biodiversity risk assessment and monitored land use around operating assets to ensure effective risk management for biodiversity. The results indicated that BPP has a low risk regarding biodiversity. All operational control assets are located in urban, industrial, and vacant areas, which are considered low biodiversity areas. Neither the power plants nor the business units are situated in areas with high biodiversity potential, such as World Heritage Sites or protected areas designated by the International Union for Conservation of Nature (IUCN) Categories 1-4, including strictly protected areas, national parks, natural monuments, habitat/species management areas, or wildlife sanctuaries. All operations have upgraded their emission control units to ultra-low emissions and are well recognized by regulatory agencies. There have been no reported adverse impacts on the environment or biodiversity in the surrounding areas.

## Appendix: Banpu Power Biodiversity Policy



Type: Policy No: BPP-AEM-PO-012 Revision: 01 Title: Biodiversity	Banpu Power Public Company Limited Health, Safety, Environment and Community Engagement -	Page 1 / 3
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### Policy

### *Biodiversity*

Revision	01
Effective Date	2022-07-08
Process Owner	Health, Safety, Environment and Community Engagement

Document Revision Control				
Revision	Author	Effective Date	Change Description	Ref. Doc no.
01	mingkwan_k	2022-07-08	This policy was approved by BPP BOD on 25 June 2022.	BPP-AEM-PO-012

Approval Record		
Approver	Job title	Date
Somruedee Chaimongkol	Chief Executive Officer	2022-07-08
Kirana Limpaphayom	Chief Executive Officer - BANPU Power	2022-07-08
Praphan Likitwacharakorn	Chief Operating Officer - Power Business	2022-07-07
Issara Niropas	Vice President - Asset Management	2022-07-04



Type: Policy No: BPP-AEM-PO-012 Revision: 01 Title: Biodiversity	Banpu Power Public Company Limited Health, Safety, Environment and Community Engagement -	Page 2 / 3
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### ***Introduction:***

Biodiversity is one of sustainability issues of power business. Improper biodiversity management could lead to impact on license-to-operate and reputation of the company. Banpu Power, therefore, is aware of the need to take urgent and significant actions to reduce the degradation of natural habitats, halt the loss of biodiversity and ecosystem services. This also be a part of the solutions and support global agreement on biodiversity, especially SDG Goal 15, to protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, reverse land degradation and habit biodiversity loss.

### ***Objective:***

The company aim to prevent/ minimize adverse impacts on biodiversity for all operations at the beginning of project development and operation.

### ***Scope:***

This policy shall be integrated and applied to Banpu Power and its subsidiaries which Banpu Power has management control. Moreover, this policy should be promoted to our joint ventures and throughout supply chain.

In implementing this policy, Banpu Power shall establish measurable indicators and Quality Assurance Review (QAR) system to monitor and review performance to ensure that this policy's goals and targets will be achieved. HSEC Corporate would conduct QAR with country in every operation once in every two years.

### ***Definitions:***

n/a

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### ***Policy Statement / Principles:***

We commit to;

- 1) Embrace nature-related risks that include financial, nature dependencies and impact to organization and society.
- 2) Assess biodiversity risks and impacts in all operations and new investment.
- 3) Develop biodiversity management plan and assess biodiversity value followed a scientifically anchored approach for all operations/ projects identified as a high biodiversity value in the area.
- 4) Integrate consideration of biodiversity assessment into all stages (i.e. exploration, construction, operation and closure) of the project life cycle.
- 5) Ensure none of our activities will operate in World Heritage areas and IUCN (International Union for Conservation of Nature) Category I-IV protected areas and no deforestation.
- 6) Ensure none of our activities and supply chain will lead to extinction of IUCN's Red List of Threatened Species.
- 7) Manage to achieve a Net Positive Impact (NPI) on biodiversity in our operational areas at the end of closure stage through mitigation hierarchy, begins with 'Avoid' - unacceptable impacts, 'Reduce' - the impacts that do occur, 'Rehabilitate' - the area that are impacted, 'Offset' - the residual net loss of biodiversity.
- 8) Build effective measurement and reporting frameworks that can be integrated into and enhance existing disclosures and align with global standards.
- 9) Engage with stakeholders, particularly local communities and academic research to develop biodiversity conservation project.
- 10) Support biodiversity research initiatives.

### ***Responsibility:***

- Management in all levels must hold accountability and take leadership in deploying this policy.
- Management in each country shall review/develop local related policy which aligns with this corporate policy by coordinating with HSEC Corporate.
- Every employee must be made aware of, promotes and implements this policy.
- Every employee is expected to extend the awareness and recognition of this policy to our partner, suppliers, contractors, subcontractors, customers and the communities in which we work.

### ***References:***

- Banpu Biodiversity Policy