Biodiversity Impact Assessment Report

Final Report

Version No. 3.0 dated 19 May 2025

Corresponding Physical Site Assessment dated 17 February 2025

www.earthood.in

Submitted to:
Neuland Laboratories Limited

Verified by:
Earthood Services Limited

Report number:
ESG.24.068.BioD_NeuL

Final Report Issued

May 19, 2025

Biodiversity Impact Assessment Report

Final Report

Prepared By

Ms. Anu Wazir; Project Lead & Biodiversity Professional

Mr. Avinash Kumar; Project Manager

Earthood Services Limited

1203-1205, 12th Floor Tower B2,

Emaar Digital Green,

Sector 61, Gurgaon 122011, IN

Web- www.earthood.com

Landline +91 124 4204599

Acronyms and Abbreviations

Name	Description
ABS	Access and Benefit-Sharing
ATFD	Agitated Thin Film Dryers
BIA	Biodiversity Impact Assessment
CBD	Convention on Biological Diversity
CDP	Carbon Disclosure Project
CDMO	Contract Development and Manufacturing Organization
CMS	Convention on the Conservation of Migratory Species of Wild Animals
CSA	S&P Global Corporate Sustainability Assessment
DSIR	Department of Scientific and Industrial Research
GMP	Good Manufacturing Practices
GRI	Global Reporting Initiative
IBAT	Integrated Biodiversity Assessment Tool
ICAR	Indian Council of Agricultural Research
IFC	International Finance Corporation
IUCN	International Union for Conservation of Nature
KMGBF	Kunming-Montreal Global Biodiversity Framework
MoEF&CC	Ministry of Environment, Forests and Climate Change
MEE	Multiple Effect Evaporators
MAT	Mutually Agreed Terms
NARP	National Agricultural Research Project
PIC	Prior Informed Consent
PS	Performance Standard
QA	Quality Assurance
QC	Quality Control
R&D	Research and Development
STZ	Southern Telangana Zone

TNFD	Taskforce on Nature-related Financial Disclosures
TSDFs	Treatment Storage Disposal Facilities
UNEP	United Nations Environment Programme
ZLD	Zero Liquid Discharge

EXECUTIVE SUMMARY

Neuland Pharma, Hyderabad, has demonstrated a proactive and responsible approach to environmental management by undertaking a biodiversity risk assessment aligned with its commitment to sustainability. The assessment found that **Neuland's operations pose no major direct threats to biodiversity**, and the company already follows sound practices in areas like hazardous waste disposal and water use efficiency.

While no critical risks were identified, the study highlights a few **opportunities for further strengthening Neuland's biodiversity stewardship**. These include improving the traceability of water sourcing (especially from tankers), integrating biodiversity criteria into supplier assessments, and adopting additional safeguards related to vehicle movement and air emissions near sensitive zones.

Key positive observations:

- Neuland maintains strong compliance in its handling of hazardous and chemical waste.
- Current operations do not fall within or near protected biodiversity zones.
- The company has already adopted an environmental policy that supports sustainability principles.

Recommended enhancements:

- Formal documentation and verification of water sourcing to ensure ecological responsibility.
- Inclusion of biodiversity indicators in supplier contracts and evaluation checklists.
- Periodic biodiversity training and awareness for site personnel and logistics operators.

Overall, Neuland's own operations reflect a **Low** biodiversity risk profile, and the company is well-positioned to evolve its biodiversity management practices in line with global best practices. However, Neuland must take proactive steps in managing any indirect risks particularly in upstream and downstream operations involving third-party vendors and suppliers by conducting thorough due diligence, monitoring supplier performance, and developing contingency plans to address unforeseen issues or breaches of contract effectively.

1. BACKGROUND

Biodiversity, encompassing species diversity, genetic variation, and ecosystem diversity, is fundamental to environmental sustainability and ecological balance. Defined by the 1992 Convention on Biological Diversity as “the variability among living organisms from all sources,” it underpins essential ecosystem services such as pollination, nutrient cycling, water purification, and climate regulation. Increasingly recognized within corporate governance frameworks and global policy agendas, biodiversity faces accelerating loss due to human activities like habitat destruction, pollution, overexploitation of resources, and climate change. To address this crisis, Biodiversity Impact Assessment (BIA) has become vital tool for evaluating project’s/company’s impacts on biodiversity while identifying strategies to mitigate harm and promote conservation efforts.

Biodiversity Impact Assessment (BIA) is a decision-support tool designed to integrate biodiversity considerations into development planning and implementation. It plays a critical role in meeting regulatory requirements while mitigating risks such as operational disruptions, reputational damage, and financial liabilities. By offering insights into the dynamic nature of ecosystems, BIA enables adaptive measures to address uncertainties and unpredictable ecosystem behaviors.

This approach applies not only to biodiversity-rich natural habitats but also to urban environments where biodiversity significantly influences quality of life. Furthermore, BIAs align with international safeguard standards like the International Finance Corporation’s Performance Standard 6 (IFC PS6), which emphasizes achieving no net loss of natural habitats and promoting sustainable management of living resources.

2. INTRODUCTION

Neuland Laboratories Limited (hereinafter referred to as “Neuland” or “Company”) established in 1984, is a leading global API Contract Development and Manufacturing Organization (CDMO). Operating within the pharmaceutical sector, Neuland supports biotechnology and pharmaceutical companies in the design, development and manufacturing of complex Active Pharmaceutical Ingredients (APIs) where biodiversity plays a critical role in sourcing raw materials and maintaining ecosystem services, Neuland recognizes the dual impact of its activities on natural ecosystems.

Operating three state-of-the-art manufacturing facilities and Research and Development (R&D) unit near Hyderabad, India, compliant with stringent regulatory standards, Neuland is committed to aligning its operations with international ESG compliance frameworks and biodiversity safeguard requirements. While the industry’s reliance on biological resources and manufacturing processes can pose risks to biodiversity through pollution, resource depletion, and habitat disruption, Neuland’s dedication to sustainable practices offers opportunities for conservation and responsible resource management.

To meet global ESG standards and safeguard biodiversity effectively, Neuland emphasizes the importance of conducting Biodiversity Impact Assessments (BIAs). These assessments enable the Company to evaluate its ecological footprint, mitigate adverse impacts, and contribute positively to biodiversity conservation. By adhering to international guidelines such as those established by the International Finance Corporation (IFC) and the Convention on Biological Diversity (CBD), Neuland aims to integrate biodiversity considerations into its business strategy while fostering long-term environmental stewardship.

Aligned with this commitment, Neuland has approached Earthood Services Limited (hereinafter referred to as "Earthood" and formerly known as Earthood Services Private Limited) for advisory support on Biodiversity Impact Assessment for three manufacturing units and one R&D center. This collaboration underscores Neuland's proactive approach toward understanding its biodiversity-related risks and opportunities while ensuring compliance with global sustainability frameworks. Through this report, Neuland seeks to transparently document its efforts in assessing and mitigating its impact on biodiversity while contributing meaningfully toward ecosystem preservation.

3. PROJECT OBJECTIVE

The primary goal of the biodiversity assessment is to optimise biodiversity outcomes in Neuland's operations while ensuring no net biodiversity loss. This assessment focuses on evaluating the impact of Neuland's operations on biodiversity within its campus and a 2.5 km surrounding radius, with the aim of proposing relevant biodiversity enhancement measures.

Main Objectives of the Study:

- To create a comprehensive status report on the current state of biodiversity within the study area (Neuland production units and a 2.5 km radius).
- To evaluate historical impacts on biodiversity caused by company operations using both historical surveys and secondary data sources.
- To identify opportunities for restoration and propose a Biodiversity Enhancement Programme aimed at improving local ecosystems.

4. BIODIVERSITY ASSESSMENT APPROACH

To conduct a comprehensive Biodiversity Impact Assessment (BIA) for Neuland, the following approach and methodology was applied.

4.1 Desk-Based Review

The first step involves conducting a thorough review of all project-related documents, including:

- Review of applicable local environmental laws and biodiversity protection regulatory requirements, environmental permits and approvals.
- Review of available project documents, site plans, layouts, and operational details.
- International guidelines such as those provided by the Convention on Biological Diversity (CBD), International Finance Corporation (IFC) Performance Standards, or other globally recognized frameworks.
- Gathering existing data from scientific publications, environmental databases, previous studies in the area, and government reports.

4.2 Site-Specific Survey

To identify site-specific issues that may impact biodiversity expert team from Earthood including a Biodiversity expert and an Environment expert undertook a site-specific biodiversity assessment of Neuland Unit-I, II, III, R&D facility and surrounding area. The study was conducted in the Month of February 2025. The survey conducted includes:

- Mapping the geographical location of the operational sites/units.
- Assessing habitat types (e.g., forests, wetlands) within or near the operational sites/units.
- Identification of floral and faunal species present at each site/unit, and identify species of higher conservation importance as per IUCN Red List categories and Wildlife Protection act 1972, India.
- Identification of nearby protected areas, sensitive wildlife habitats or ecologically sensitive zones or key biodiversity areas using tools like IBAT (Integrated Biodiversity Assessment Tool).
- Assessing land use patterns in the vicinity of the project area.
- Assessing ecosystem services (e.g., water provision, pollination) that may be impacted by operations.

This survey provided insights into potential conflicts between operations and local ecosystems. The results of the survey were interpreted to identify threatened and endangered species as per the IUCN Red Data Book and the Wildlife Protection Act, 1972. An inventory of flora and fauna species is presented in the report.

4.3 Discussions with Local Communities and Company Staff

Engaging with stakeholders is a critical component of the assessment. This involved:

- Consulting company staff to gather information about operational practices that may influence ecological systems.
- Conducting interviews with local communities to understand the surroundings and their perceptions of the Neuland's impact on biodiversity.
- Identifying key concerns raised by stakeholders regarding biodiversity risks or ecosystem services.

These discussions help in identifying both direct and indirect impacts on biodiversity from multiple perspectives.

4.4 Identification of Risks Associated with Biodiversity

Based on baseline data and stakeholder inputs, potential risks to biodiversity are identified as per key activities in each phase of Neuland operation. These risks may include:

- Upstream Activities:
  - Raw material procurement.
  - Supplier selection and practices.
  - Transportation of raw materials.
- Operational Activities:
  - Manufacturing processes.
  - Waste generation and management.
  - Energy consumption.
- Downstream Activities:
  - Product transportation and distribution.
  - End-of-life product disposal or recycling.

A report detailing baseline conditions, predicted impacts, mitigation measures is proposed.

4.5 Dependency Analysis

The analysis evaluates how Neuland's business activities depend on biodiversity for resources and ecosystem services that includes:

- Dependence on plants for natural active ingredients.
- Water-intensive manufacturing processes reliant on freshwater ecosystems.

5. APPLICABLE REGULATIONS, GUIDELINES AND STANDARDS

This section describes regulations, statutory guidelines and obligatory standards that are applicable to operations of Neuland.

5.1 National Regulations

In India the Ministry of Environment, Forests and Climate Change (MoEF&CC) is the apex administrative body for (i) regulating and ensuring environmental protection; (ii) formulating the environmental policy framework in the country; (iii) undertaking conservation & survey of flora, fauna, forests and wildlife; and (iv) planning, promotion, co-ordination and overseeing the implementation of environmental and forestry programmes.

Table 1: Relevant regulation pertaining to Neuland's business activities

S. No.	Regulation	Agency	Requirement	Applicability /Remarks
1	Forests (Conservation) Act, 1980 and Rules 1981	Forest Department	The Forest Conservation Act and Rules mandate projects requiring diversion of forest land for non-forest purposes to seek Forest Clearance from the Ministry of Environment and Forests and Climate Change (MoEF&CC)	Not Applicable As reported, no forest land is involved for the development of any unit. All operational units of Neuland is located under identified industrial zones.
2	Wildlife (Protection) Act 1972, Wildlife	Chief Conservator Wildlife,	The Act provides for the protection of wild animals, birds and	It is observed that none of the manufacturing units or

	and amendments	NBWL/State Forest Department and MoEF&CC	plants; and for matters connected therewith or ancillary or incidental there to. Supreme Court has directed that all projects which require environmental clearance and are located within the distance of 10Km of National Park and Sanctuaries must be placed before the standing Committee of the National Board for Wildlife constituted under the Wildlife (Protection) Act, 1972.	R&D center is located within a 10 km radius of any legally designated area such as wildlife sanctuaries, national parks, or biosphere reserves. Since these facilities do not fall within the specified proximity to protected areas, the provisions of the Act concerning such zones are not applicable.

5.2 Relevance of International Frameworks

A. CONVENTION ON BIOLOGICAL DIVERSITY

The Convention on Biological Diversity (CBD) is an international treaty adopted at the Earth Summit in Rio de Janeiro in 1992. It has three main objectives:

- Conservation of biological diversity.
- Sustainable use of its components.
- Fair and equitable sharing of benefits arising from the utilization of genetic resources.

The CBD emphasizes that businesses must adopt practices that conserve biodiversity while ensuring sustainable development.

Applicability to Neuland Pharma

Though Neuland's operations may involve direct sourcing of genetic resources or natural compounds from biodiversity-rich areas, the company must ensure that its activities do not lead to biodiversity loss or ecosystem degradation and adopt sustainable sourcing practices.

B. NAGOYA PROTOCOL

The Nagoya Protocol is a supplementary agreement to the CBD, adopted in 2010, focusing specifically on Access and Benefit-Sharing (ABS). It provides a legal framework for ensuring that benefits arising from the use of genetic resources are shared fairly and equitably with the countries or communities providing those resources.

Applicability to Neuland Pharma

Only applicable if Neuland uses genetic resources (e.g., plant extracts or microbial strains) sourced from other countries, then the company must comply with ABS requirements under the Nagoya Protocol, this includes obtaining Prior Informed Consent (PIC) from resource providers and negotiating Mutually Agreed Terms (MAT) for benefit-sharing.

However, as per the consultations held with Neuland's operational staff at each unit, ESG staff and sustainability report, Neuland does not have its manufacturing sites within legally designated biodiversity sites. Further, none of the raw materials used in the manufacturing process is sourced for natural resources (flora and fauna)

C. GLOBAL BIODIVERSITY FRAMEWORK

Under the Convention on Biological Diversity at COP15, the Kunming-Montreal Global Biodiversity Framework (KMGBF) was adopted in December 2022, this framework sets ambitious goals and targets to halt biodiversity loss by 2030 through measurable actions such as protecting at least 30% of land and sea areas globally. It emphasizes sustainable use of biodiversity, conservation efforts, restoration activities, and financial commitments.

Applicability to Neuland Pharma

- Neuland should align its operations with global goals such as reducing habitat destruction, pollution control, and sustainable use of biological resources.
- The company can contribute by adopting nature-positive strategies such as restoring degraded ecosystems impacted by its supply chain and supporting conservation initiatives near operational sites.
- Regular monitoring and transparent reporting of biodiversity-related impacts would position Neuland as a leader in corporate sustainability efforts aligned with global priorities.

D. IFC PERFORMANCE STANDARD

IFC Performance Standard 6 (PS6), developed by the International Finance Corporation, focuses on "Biodiversity Conservation and Sustainable Management of Living Natural Resources." It requires businesses seeking IFC financing to:

- Protect and conserve biodiversity.
- Maintain ecosystem services.
- Manage living natural resources sustainably.

PS6 emphasizes avoiding impacts on critical habitats, minimizing harm to natural habitats, and promoting sustainable resource management.

Applicability to Neuland Pharma

Since Neuland Pharma does not operate in biodiversity-rich areas or critical habitats and is not sourcing raw materials from biodiversity-rich areas or operating in regions with critical habitats, the direct applicability of PS6 is limited. However, PS6 also promotes sustainable resource management practices that could still be relevant and beneficial for aligning with global sustainability standards to ensure compliance with broader sustainability goals.

E. TASKFORCE ON NATURE-RELATED FINANCIAL DISCLOSURES

The Taskforce on Nature-related Financial Disclosures (TNFD) provides a risk management and disclosure framework that enables businesses to identify, assess, manage, and disclose their dependencies and impacts on nature systematically. Its goal is to enable better decision-making by integrating nature-related risks into financial reporting processes.

Applicability to Neuland Pharma

Neuland is required to assess Nature-related Dependencies on how business operations depend upon ecosystem services (e.g., water availability for manufacturing processes), evaluate risks associated with biodiversity loss along its value chain. Assess risks/opportunities arising from these dependencies/impacts and develop strategies for mitigating risks while leveraging opportunities.

F. CONVENTION: CONSERVATION OF MIGRATORY SPECIES OF WILD ANIMALS

The Convention on the Conservation of Migratory Species of Wild Animals (CMS), also known as the Bonn Convention, adopted in 1979 and came into force in 1983. is an international treaty under the United Nations Environment Programme (UNEP) that aims to conserve migratory species and their habitats globally. It aims to conserve terrestrial, marine, and avian migratory species throughout their range by facilitating international cooperation among countries where these species migrate. Migratory species are particularly vulnerable due to habitat fragmentation, climate change, pollution, and other anthropogenic pressures.

The CMS provides two appendices:

- Appendix I: Lists migratory species threatened with extinction.
- Appendix II: Lists migratory species that require international agreements for their conservation and management.

India is a signatory country to this convention.

Requirements under CMS Relevant to Neuland Pharma

- Avoidance of Harmful Activities:
    - The CMS requires parties to avoid actions that could endanger migratory species listed in **Appendix I**. For instance:
        - Habitat destruction caused by industrial facilities.
        - Pollution from pharmaceutical production processes could contaminate water bodies or ecosystems used by migratory species.

- Protection of Critical Habitats:
    - The CMS emphasizes safeguarding critical habitats along migration routes (e.g., breeding grounds or stopover sites). For instance:
        - Wetlands used by migratory birds might be affected if wastewater discharge from pharmaceutical plants alters water quality.
        - Forests hosting seasonal migrations might face deforestation risks due to construction activities.

- International Cooperation:
    - The CMS encourages collaboration between nations sharing responsibility for a particular migratory species' range. If Neuland sources raw materials from multiple countries or conducts research across borders involving wildlife populations, it must comply with agreements established under the CMS framework.

Compliance with CMS aligns with global sustainability goals such as those outlined in the Kunming-Montreal Global Biodiversity Framework. By adhering to this convention's principles, Neuland Pharma can demonstrate its commitment to biodiversity conservation while mitigating reputational risks associated with environmental harm.

6. SITE DESCRIPTION

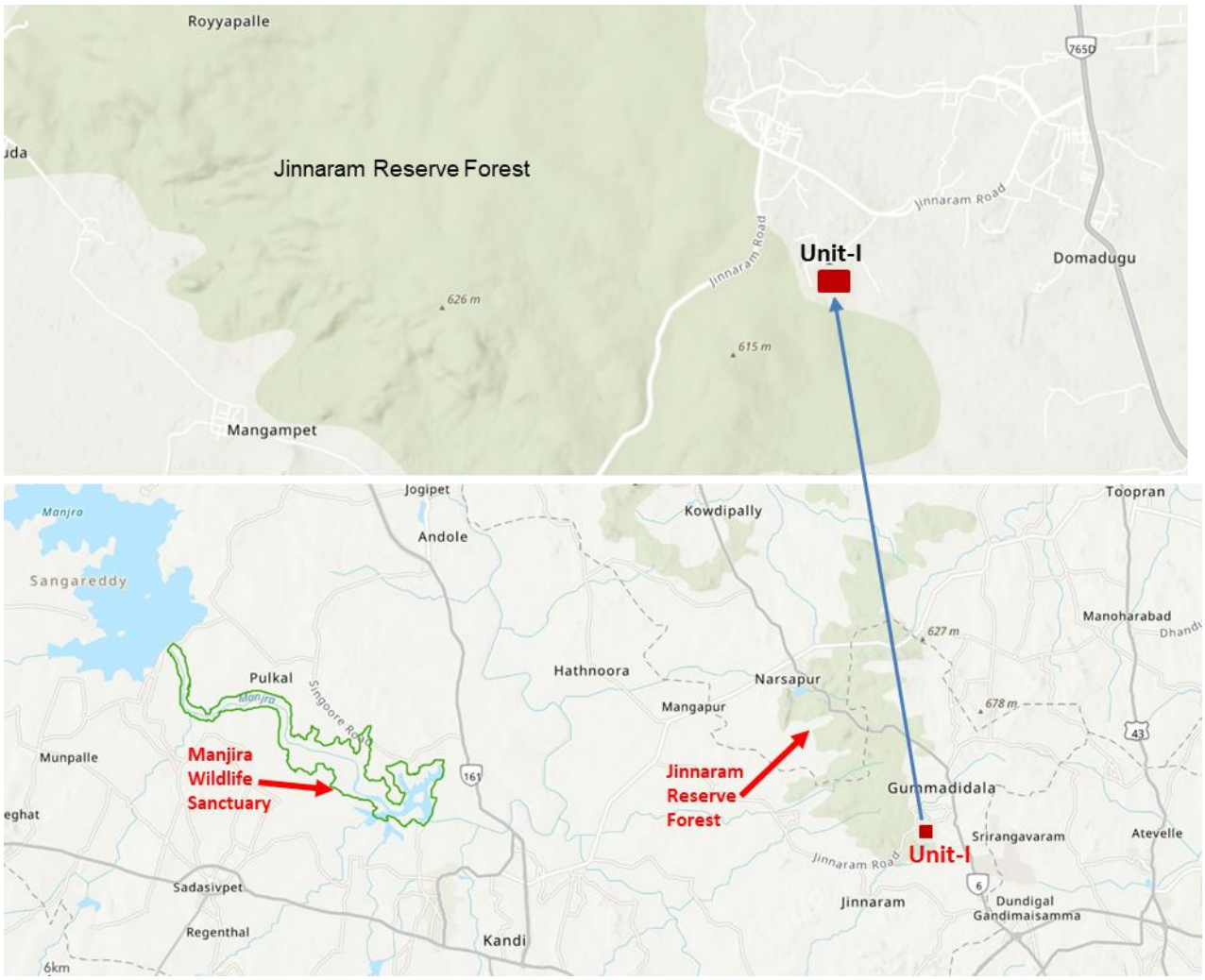
6.1 Unit-I

M/s. Neuland Laboratories Ltd., Unit-I is located at Bonthapalle, Gummadidala, Sangareddy, Telangana. The unit was established in 1984 and occupies a total area of 11.2 acres. The facility has a production capacity of 1825.7 kg/day and an API manufacturing capacity of 233 kl. It consists of seven production blocks, including Kilo Labs, along with supporting departments such as Quality Assurance (QA), Quality Control (QC), and regulatory affairs.

The Unit is surrounded by a road to the north, RMS to the east, open land to the south, and a road and vacant land to the west. The nearest human settlement is Bonthapally village, located 1.71 km away from the Unit. The Jinnaram Reserve Forest lies approximately 1.7 km from the Unit, Majira Wildlife Sanctuary is about 29 km away from the Unit. The primary source of water for operations is public supply supplemented by tankers sourced externally.

The raw materials used in the Unit include various chemicals, chemical intermediates, solvents, purification agents like activated carbon, and catalysts.

Figure 1: Unit 1 Map



Regulatory Compliance

Unit-I adheres to stringent Good Manufacturing Practices (GMP) guidelines and meets international regulatory standards set by agencies such as:

- US FDA (United States Food & Drug Administration),
- TGA (Therapeutic Goods Administration - Australia),
- PMDA (Pharmaceuticals and Medical Devices Agency - Japan), and
- WHO (World Health Organization).

6.2 Unit-II

Neuland Laboratories' Unit II is a state-of-the-art manufacturing facility established in 1994 and situated in Pashamylaram positioned within the Patancheru Mandal of Sangareddy District, which is an established industrial belt widely recognized as a hub for industrial development that hosts numerous pharmaceutical manufacturing companies and related industries. Pashamylaram is approximately 45 km from Hyderabad Airport, Telangana. and pharmaceutical. itself is part. The Jinnaram Reserve Forest lies approximately 18 km away from the facility while Manjira Wildlife Sanctuary, known for its biodiversity and ecological significance, is located at a distance of approximately 17 km.

The total area of Unit II spans an impressive 36,800 square meters (m^2). This expansive space accommodates advanced infrastructure designed specifically for the manufacturing of Active Pharmaceutical Ingredients while adhering to stringent regulatory standards. The layout of the facility ensures optimal utilization of space for production blocks, storage warehouses, engineering workshops, and other essential operational units.

The infrastructure at Unit II has been meticulously designed to meet global standards for pharmaceutical manufacturing while ensuring compliance with Good Manufacturing Practices. Key components include:

- Main Production Blocks: These blocks are equipped with advanced machinery and systems tailored for API manufacturing processes.
- Engineering Workshop: A dedicated workshop supports maintenance activities and ensures seamless operation of equipment.
- Warehouses: These warehouses are utilized for storing raw materials, intermediates, finished products, and other essential supplies under controlled conditions to maintain quality integrity.

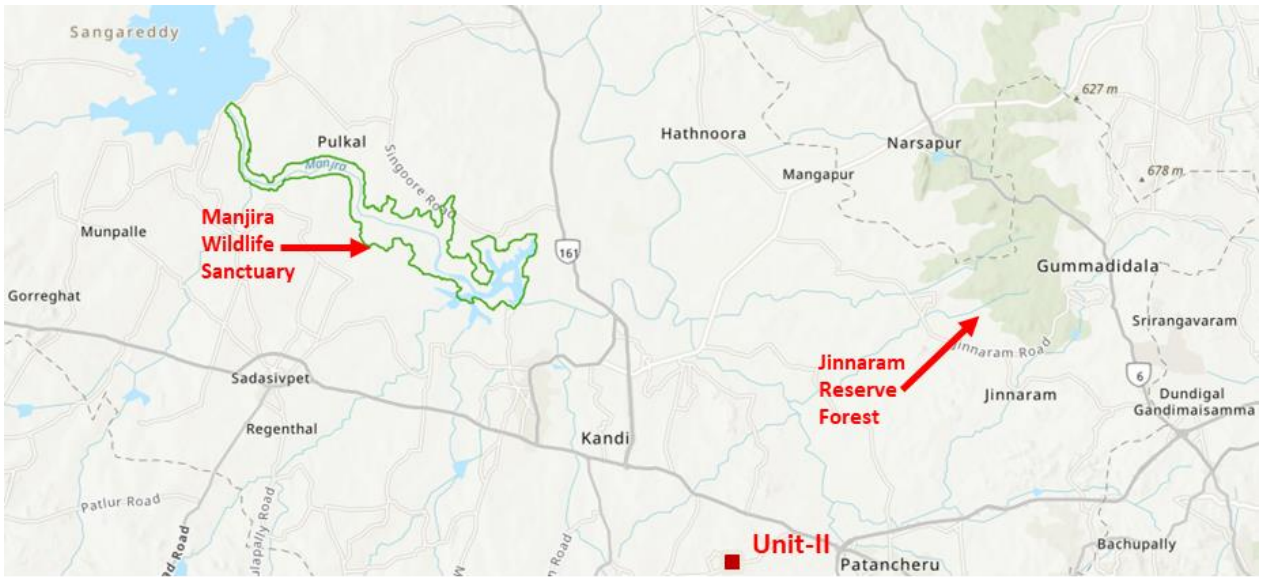
The facility also incorporates robust safety measures across all operations to protect personnel, equipment, and the environment. Its design emphasizes efficiency while maintaining high safety standards throughout production processes.

Regulatory Approvals

Unit II holds multiple regulatory approvals from globally recognized agencies, including:

- US FDA (United States Food and Drug Administration)
- EDQM (European Directorate for the Quality of Medicines)
- PMDA (Pharmaceuticals and Medical Devices Agency - Japan)
- ANVISA (Agência Nacional de Vigilância Sanitária - Brazil)

Figure 2: Unit II Map



6.3 Unit-III

M/s. Neuland Laboratories Ltd., Unit III is a state-of-the-art manufacturing facility located within the Gaddapotharam industrial area near Hyderabad, Telangana. The Gaddapotharam industrial area, where Unit III is situated, is primarily an industrial zone. It is surrounded by other pharmaceutical and chemical industries that contribute to the region's prominence as a hub for manufacturing activities. This facility was acquired by Neuland Laboratories in December 2017. Unit III spans approximately 12 acres, making it one of Neuland's largest facilities. This expansive space allows for multiple production blocks, research laboratories, quality control units, and other essential infrastructure required for advanced pharmaceutical manufacturing processes. The unit is classified as a multi-product manufacturing facility, which means it is capable of handling the production of various advanced intermediates and Active Pharmaceutical Ingredients. The facility was originally inspected by the United States Food and Drug Administration (USFDA) in 2015 before its acquisition by Neuland.

The facility is well-connected via major roads leading to Hyderabad city, which lies approximately 40-50 km away. This ensures smooth transportation of raw materials and finished products. The Jinnaram Reserve Forest lies approximately 5 km away from the facility while Manjira Wildlife Sanctuary, known for its biodiversity and ecological significance, is located at a distance of approximately 15 km.

Unit III boasts five dedicated production blocks designed for advanced intermediate and API manufacturing processes. The facility also includes:

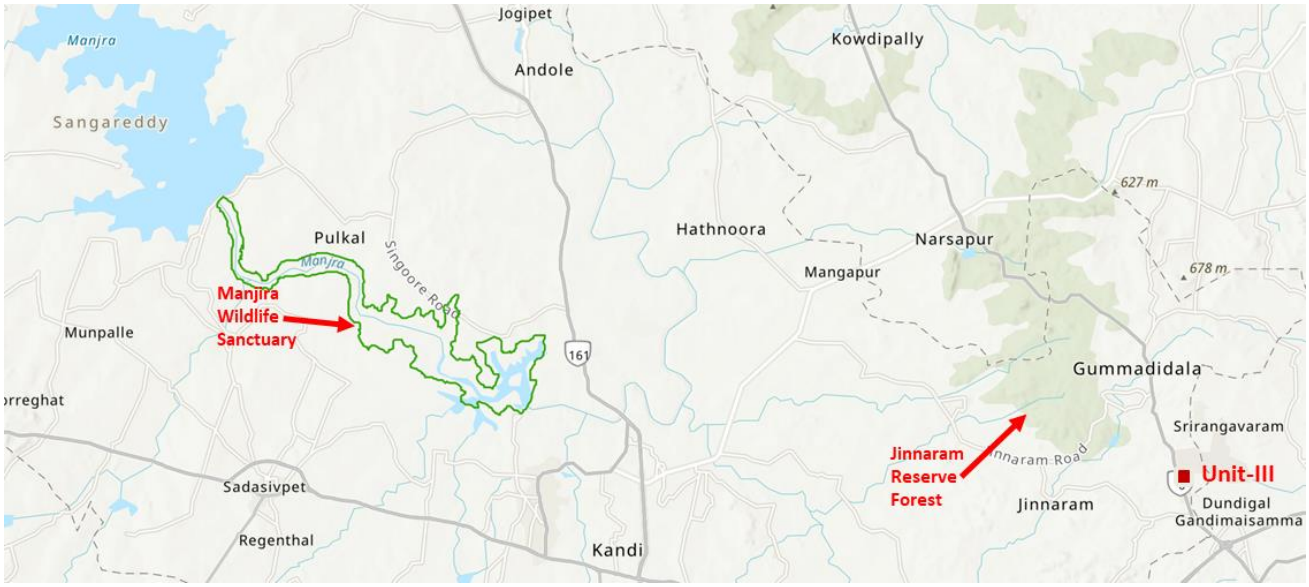
- A pilot plant for small-scale production runs, enabling process optimization before full-scale manufacturing.
- An on-site development center that supports innovation in chemical synthesis and process improvement.
- An analytical method development laboratory, which ensures that all products meet stringent quality standards.
- A fully functional quality control laboratory, which plays a critical role in maintaining compliance with international pharmaceutical regulations.

Manufacturing Capacities

- API Manufacturing Capacity: The facility has an impressive API manufacturing capacity of 363 kiloliters (KL), enabling large-scale production.
- Hydrogenation Reaction Volume: It features a hydrogenation reaction volume of 6 KL.
- Cryogenic Reaction Volume: The cryogenic reaction volume stands at 15 KL.
- Solvent Recovery System: A solvent recovery system with a capacity of 20 KL per day ensures efficient recycling and sustainability practices.

The raw materials used include various chemicals, chemical intermediates, solvents, purification agents like activated carbon, and catalysts.

Figure 3: Unit III Map



Regulatory Approvals

Unit III holds multiple regulatory approvals from globally recognized agencies, including:

- US FDA (United States Food and Drug Administration)
- EDQM (European Directorate for the Quality of Medicines)
- PMDA (Pharmaceuticals and Medical Devices Agency - Japan)
- ANVISA (Agência Nacional de Vigilância Sanitária - Brazil)

6.4 Research & Development Facility

M/s. Neuland Laboratories Ltd., Research and Development (R&D) facility is located at Bonthapalle, Gummadidala, Sangareddy, Telangana. This facility is strategically situated approximately 300 meters away from the company's Unit I manufacturing facility in Bonthapally village. The surroundings of the Bonthapalle R&D facility are primarily industrial in nature due to its location within an established pharmaceutical manufacturing hub in Sangareddy District. It is approximately 40 km from Hyderabad city center and about 65 km from Rajiv Gandhi International Airport.

Regulatory Approvals

- The facility has received approval from the Department of Scientific and Industrial Research (DSIR), Government of India.
- It has also been inspected by international regulatory agencies like the US Food and Drug Administration (USFDA) and notably, during an inspection conducted by USFDA in February 2016, no observations were made by the agency.

7. BIODIVERSITY BASELINE & STUDY AREA

The entire area covered by the operational units i.e., Unit I, II, III and R&D Unit, along with the area falling within 5 km in outward direction from each unit is considered for conducting the biodiversity assessment. This area collectively referred to as 'Study Area' hereinafter. The study area falls in a hot semi-arid climate ecoregion characterized by medium to deep, loamy to clayey mixed red and black soils, tropical wet and dry climate, medium water-holding capacity, phyto-geographic classification of the study area is provided in the following Table.

Table 2: Vegetation Classification of the Region

Area Type	Classification
Biogeographic Zone/Province of India	Deccan Peninsula/Eastern Plateau
Agro Ecological Sub Region (ICAR)	7- Deccan (Telangana) Plateau and Eastern Ghats
Agro-Climatic Region	Southern Plateau and Hills Region (Zone 10)
Agro Climatic Zone (NARP)	Southern Telangana Zone (STZ)

7.1 Habitat type of Study Area

The primary habitat type surrounding Neuland units is classified as an industrial zone. The areas have undergone significant anthropogenic changes due to industrial development, infrastructure expansion, and urbanization. These areas are typically dominated by manufacturing facilities, warehouses, and logistical operations. The landscape is heavily modified with paved surfaces, buildings, and infrastructure that support industrial activities. The ecological integrity of these zones is often compromised due to pollution, habitat fragmentation, and altered hydrology.

Vegetation in the area is often sparse or limited to ornamental plants or small patches of greenery maintained for landscaping purposes. Natural habitats are either completely replaced or highly fragmented due to construction activities such as roads, factories, warehouses, and other infrastructure. The presence of some agricultural fields and open scrublands transitioning into urban use were also observed. These regions may still host remnants of native vegetation or small water bodies that have not yet been entirely altered by human activities.

7.2 Flora

The vegetation around the study area is dominant by tree such as *Prosopis cineraria, Acacia nilotica, Azadirachta indica, Acacia nilotica, Acacia auriculoformis, Pongamia pinnata, Butea monosperma, Cassia siamea, Ficus benghalensis, Ficus religiosa, Albizzia lebbeck,Tamarindus indica, Ailanthus excelsa, Borassus flabellifer, Phoenix sylvestris* etc. which are mainly used as shade trees. Shrubs primarily include *Lantana camara, Calotropis procera, Hyptis suaveolens, Zizyphus* sp., *Hyptis suaveolens* etc., while herbs and grasses primarily include *Celosia argentea, Cynodon dactylon, Cassia tora* etc.

Table 3: List of plants identified for greenbelt plantations within operational Units

S.No.	Botanical name	Common Name	Type	Family
1	*Acacia auriculiformis*	Ear-pod wattle	Tree	Fabaceae
2	*Albizia lebbeck*	Indian siris	Tree	Fabaceae
3	*Cassia fistula*	Indian laburnum	Tree	Fabaceae
4	*Delonix regia*	Royal poinciana	Tree	Fabaceae
5	*Pongamia pinnata*	Pongame oil tree	Tree	Fabaceae
6	*Peltophorum pterocarpum*	Copper-pod tree	Tree	Fabaceae
7	*Polyalthia longifolia*	False ashoka	Tree	Annonaceae
8	*Casuarina equisetifolia*	Horsetail she-oak	Tree	Casuarinaceae
9	*Azadirachta indica*	Neem	Tree	Meliaceae
10	*Ficus benghalensis*	Banyan	Tree	Moraceae
11	*Ficus racemosa*	Cluster fig	Tree	Moraceae
12	*Ficus religiosa*	Sacred fig	Tree	Moraceae
13	*Holoptelea integrifolia*	Indian elm	Tree	Ulmaceae
14	*Samanea saman*	Monkey pod tree	Tree	Mimosaceae
15	*Syzygium cumini*	Java Plum	Tree	Myrtaceae
16	*Terminalia catappa*	Indian-almond	Tree	Combretaceae
17	*Callistemon citrinus*	Crimson bottlebrush	Shrub	Myrtaceae
18	*Calophyllum inophyllum*	Sultan Champa	Shrub	Calophyllaceae
19	*Dendrocalamus strictus*		Bamboo	Poaceae

Source -Neuland Data

Table 4: List of plants reported in the study area

S.No.	Botanical name	Family	Type
1	*Acacia auriculiformis*	Fabaceae	Tree
2	*Acacia leucophloea*	Fabaceae	Tree
3	*Acacia leucophala*	Fabaceae	Tree
4	*Acacia nilotica*	Fabaceae	Tree
5	*Albizia lebbeck*	Fabaceae	Tree
6	*Annona squamosa*	Annonaceae	Tree
7	*Anogeissus latifolia*	Combretaceae	Tree
8	*Azadirachta indica*	Meliaceae	Tree

9	*Bauhinia purpurea*	Fabaceae	Tree
10	*Bauhinia racemosa*	Caesalpiniaceae	Tree
11	*Borassus flabellifer*	Arecaceae	Tree
12	*Caesalpinia pulcherrima*	Fabaceae	Tree
13	*Cassia auriculata*	Caesalpiniaceae	Tree
14	*Cassia fistula*	Leguminosae	Tree
15	*Cassia siamea*	Leguminosae	Tree
16	*Casuarina equisetifolia*	Casuarinaceae	Tree
17	*Catunaregam spinosa*	Rubiaceae	Tree
18	*Ceiba pentandra*	Malvaceae	Tree
19	*Cocos nucifera*	Arecaceae	Tree
20	*Dalbergia latifolia*	Papilionaceae	Tree
21	*Dalbergia paniculata*	Papilionaceae	Tree
22	*Dalbergia sisso*	Caesalpiniaceae	Tree
23	*Delonix regia*	Fabaceae	Tree
24	*Dendrocalamus strictus*	Poaceae	Tree
25	*Eucalyptus globulus*	Myrtaceae	Tree
26	*Ficus benghalensis*	Moraceae	Tree
27	*Ficus hispida*	Moraceae	Tree
28	*Ficus racemosa*	Moraceae	Tree
29	*Ficus religiosa*	Moraceae	Tree
30	*Grewia flavescens*	Tiliaceae	Tree
31	*Grewia hirsuta*	Tiliaceae	Tree
32	*Lannea coromandelica*	Anacardiaceae	Tree
33	*Lawsonia inermis*	Lythraceae	Tree
34	*Leucaena leucocephala*	Leguminosae	Tree
35	*Mangifera indica*	Anacardiaceae	Tree
36	*Melia azadirach*		Tree
37	*Mimosops elengi*	Sapotaceae	Tree
38	*Murraya koenigii*	Rutaceae	Tree
39	*Nerium odoratum*	Apocynaceae	Tree
40	*Peltophorum pterocarpum*	Leguminosae	Tree
41	*Phoenix sylvestris*	Araceae	Tree

42	*Pithecellobium dulce*	Leguminosae	Tree
43	*Plumeria alba*	Apocynaceae	Tree
44	*Plumeria rubra*	Apocynaceae	Tree
45	*Polyalthia longifolia*	Annonaceae	Tree
46	*Pongamia pinnata*	Fabaceae	Tree
47	*Prosopis juliflora*	Mimosaceae	Tree
48	*Samanea saman*	Mimosaceae	Tree
49	*Sapindus emarginatus*	Sapindaceae	Tree
50	*Soymida febrifuga*	Meliaceae	Tree
51	*Syzygium cumini*	Myrtaceae	Tree
52	*Tamarindus indica*	Caesalpiniaceae	Tree
53	*Tecoma stans*	Bignoniaceae	Tree
54	*Tectona grandis*	Verbenaceae	Tree
55	*Terminalia catappa*	Combretaceae	Tree
56	*Thespecia populnea*	Malvaceae	Tree
57	*Vitex negundo*	Verbenaceae	Tree
58	*Ziziphus numularia*	Rhamnaceae	Tree
59	*Ziziphus oenopolia*	Rhamnaceae	Tree
60	*Zizyphus jujuba*	Rhamnoceae	Tree
61	*Abutilon cryspum*	Malvaceae	Shrub
62	*Abutilon indicum*	Malvaceae	Shrub
63	*Balanites aegyptiaca*	Balanitaceae	Shrub
64	*Caesalpinia bonduc*	Leguminosae	Shrub
65	*Calotropis gigantea*	Asclepiadaceae	Shrub
66	*Calotropis procera*	Asclepiadaceae	Shrub
67	*Capparis sapiaria*	Capparaceae	Shrub
68	*Carissa carandas*	Apocynaceae	Shrub
69	*Cascabela thevetia*	Apocynaceae	Shrub
70	*Cassia occidentalis*	Caesalpiniaceae	Shrub
71	*Cissus quadrangularis*	Vitaceae	Shrub
72	*Datura stramonium*	Solanaceae	Shrub
73	*Dodonaea viscosa*	Sapindaceae	Shrub
74	*Echinops ehinatus*	Asteraceae	Shrub

75	*Erythroxylon monogynum*	Erythroxylaceae	Shrub
76	*Grewia hirsuta*	Tiliaceae	Shrub
77	*Grewia obtusa*	Tiliaceae	Shrub
78	*Hyptis suaveolens*	Lamiaceae	Shrub
79	*Indigofera cassiodes*	Papilionaceae	Shrub
80	*Ipomoea carnea*	Convolvulaceae	Shrub
81	*Ixora coccinea*	Rubiaceae	Shrub
82	*Jatropha gossypifolia*	Euphorbiaceae	Shrub
83	*Lantana camara*	Verbenaceae	Shrub
84	*Opuntia dillenii*	Cactaceae	Shrub
85	*Randia dumetorum*	Rubiaceae	Shrub
86	*Sarcostemma viminale*	Apocyanaceae	Shrub
87	*Solanum melongena L*	Solanaceae	Shrub
88	*Typha angustata*	Typhaceae	Shrub
89	*Achyranthes aspera*	Amaranthaceae	Herb
90	*Aerva lanata*	Amaranthaceae	Herb
91	*Aloe vera*	Asphodelaceae	Herb
92	*Alternanthera sessilis*	Amaranthaceae	Herb
93	*Amaranthus spinosus*	Amaranthaceae	Herb
94	*Argemone mexicana*	Papaveraceae	Herb
95	*Asparagus racemosus*	Asperagaceae	Herb
96	*Barleria prinotis*	Acanthaceae	Herb
97	*Boerhaevia diffusa*	Nyctaginaceae	Herb
98	*Cassia uniflora*	Caesalpiniaceae	Herb
99	*Catharanthus roseus*	Apocynaceae	Herb
100	*Chloris barbata*	Poaceae	Herb
101	*Cleome viscosa*	Cleomaceae	Herb
102	*Crotan bonplantianum*	Euphorbiacea	Herb
103	*Dendrocalamus strictus*	Poaceae	Herb
104	*Eclipta alba*	Asteraceae	Herb
105	*Euphorbia antiquorum*	Euphorbiaceae	Herb
106	*Euphorbia hirta*	Euphorbiaceae	Herb
107	*Euphorbia tirucalli*	Euphorbiaceae	Herb

108	*Evolvulus alsinoides*	Convolvulaceae	Herb
109	*Hyptis suaveolens*	Lamiaceae	Herb
110	*Leucas aspera*	Lamiaceae	Herb
111	*Ocimum canum*	Lamiaceae	Herb
112	*Oldenlandia umbellata*	Rubiaceae	Herb
113	*Parthenium hysterophorus*	Asteraceae	Herb
114	*Pavonia zeylanica*	Malvaceae	Herb
115	*Pupalia lappacea*	Amaranthaceae	Herb
116	*Sida acuta*	Malvaceae	Herb
117	*Sida cordata*	Malvaceae	Herb
118	*Solanum surattense*	Solanaceae	Herb
119	*Sphaeranthus indicus*	Asteraceae	Herb
120	*Tephrosia purpurea*	Fabaceae	Herb
121	*Tragia involucrata*	Euphorbiaceae	Herb
122	*Tribulus terrstris*	Zygophyllaceae	Herb
123	*Tridax procumbens*	Asteraceae	Herb
124	*Triumfetta rhomboidea*	Taccaceae	Herb
125	*Urena lobata*	Malvaceae	Herb
126	*Vanda tessellata*	Orchidaceae	Herb
127	*Vernonia cinerea*	Asteraceae	Herb
128	*Zizyphus spinosa*	Rhamnaceae	Herb
129	*Catharanthus roseus*	Apocynaceae	Herb
130	*Cymbopogon coloratus*	Poaceae	Grass
131	*Cymbopogon flexuosus*	Poaceae	Grass
132	*Cynodon dactylon*	Cyperaceae	Grass
133	*Cynoglotis tuberosa*	Commelinaceae	Grass
134	*Cyperus alopecuroides*	Cyperaceae	Grass
135	*Cyperus exaltatus*	Cyperaceae	Grass
136	*Cyperus flavidus*	Cyperaceae	Grass
137	*Cyperus pangorei*	Cyperaceae	Grass
138	*Cyperus rotundus*	Cyperaceae	Grass
139	*Cyperus rubicundus*	Cyperaceae	Grass
140	*Cyperus triceps*	Cyperaceae	Grass

141	*Dendrophthoe falcata*	Loranthaceae	Grass
142	*Clitoria ternatea*	Fabaceae	Climber
143	*Combretum albidum*	Combretaceae	Climber
144	*Cryptolepis buchanani*	Periplocaceae	Climber
145	*Cucumis trigonus*	Cucurbitaceae	Climber
146	*Daemia extensa*	Asclepidaceae	Climber
147	*Hemidesmus indicus*	Asclepiadaceae	Climber
148	*Ipomoea obscura*	Convolvulaceae	Climber
149	*Marsdenia tenacissima*	Asclepiadaceae	Climber
150	*Momordica dioca*	Cucurbitaceae	Climber
151	*Pergularia daemia*	Asclepiadaceae	Climber
152	*Tinospora cordifolia*	Menispermaceae	Climber
153	*Tylophora indica*	Asclepiadaceae	Climber
154	*Ziziphus oenoplia*	Rhamnaceae	Climber
155	*Ziziphus rugosa*	Rhamnaceae	Climber

Source -Primary survey and Neuland Data

7.3 Fauna

Faunal species from the study area were recorded based on direct sightings and indirect evidences and consultation local community. During consultation with communities, pictorial representations of species were used in form of Field guides and other literatures of the faunal species of India. Based on primary survey and secondary data, Table – 5 below indicates the species of amphibians, reptiles, birds and mammals recorded as well as reported in the study area.

Table 5: Species of Faun: Amphibians, Reptiles, Birds & Mammals

S.No.	Common Name	Scientific Name	WPA Schedule	IUCN Status	Observed /Reported
Amphibians					
1	Common Indian Toad	*Duttaphrynus melanostictus*	II	LC	Observed
2	Indian Pond Frog	*Euphlyctis hexadactylus*	II	LC	Observed
Reptiles					
1	Indian Garden Lizard	*Calotes versicolor*	II	LC	Observed
2	Common Rat Snake	*Ptyas mucosa*	I	LC	Observed

3	Indian Chameleon	*Chameleon zeylanicus*	II	LC	Observed
4	House Gecko	*Hemidactylus brookii*	II	LC	Observed
Avifauna					
1	Common Myna	*Acridotheres tristis*	II	LC	Observed
2	Common Kingfisher	*Alcedo atthis*	II	LC	Observed
3	Indian Pond Heron	*Ardeola grayii*	II	LC	Observed
4	Cattle Egret	*Bulbulcus ibis*	II	LC	Observed
5	Purple Sunbird	*Cinnyris asiaticus*	II	LC	Observed
6	Common Pigeon	*Columba livia*	II	LC	Observed
7	House Crow	*Corvus splendens*	II	LC	Observed
8	Black Drongo	*Dicrurus macrocercus*	II	LC	Observed
9	Green Bee-eater	*Merops orientalis*	II	LC	Observed
10	House Sparrow	*Passer domesticus*	II	LC	Observed
11	Plain Prinia	*Prinia inornata*	II	LC	Observed
12	Indian Robin	*Saxicoloides fulicatus*	II	LC	Observed
13	Laughing Dove	*Spilopelia senegalensis*	II	LC	Observed
14	Red Wattled Lapwing	*Vanellus indicus*	II	LC	Observed
Mammals					
1	Large Bandicoot Rat	*Bandicoot indica*	II	LC	Observed
2	Indian Field Mouse	*Mus booduga*	II	LC	Observed
3	House Mouse	*Mus musculus*	II	LC	Observed
4	Three Stripped Squirrel	*Funambulus palmarum*	II	LC	Observed
5	Rhesus Monkey	*Macaca mulatta*	II	LC	Observed

Source: Desktop review of secondary data and primary site visit

LC- Lease concerned

7.4 Key Biodiversity Areas

The nearest eco-sensitive area located to the operational units is Jinnaram Reserve Forest which is approximately 0.3 km from the Unit I and R&D Unit, 3 km away from the Unit-II facility and approximately 1 km away from the facility Unit III. While, Majira Wildlife Sanctuary a legally designated area which is also a Key Biodiversity Area IBAT is about 4 km away from the Unit I and R&D Unit, 4 km away from the Unit-II facility and approximately 5 km away from the facility Unit III. Further, there is also no Biosphere Reserve, Tiger Reserve, Elephant Reserve and Important Bird Area (IBA) within 10 km of

the project site. The protected area map of Telangana is shown in Figure

Figure 4: Protected Areas in Telangana

Majira Wildlife Sanctuary

Manjira Wildlife Sanctuary in Medak district, located 50 km northwest of Hyderabad, is recognized as an important wetland for migratory birds. The water body provides considerable ecological diversity to support a large population of wetland birds. The reservoir provides drinking water to Hyderabad and Secundrabad, hence water is always stored even during the dry season. The reservoir has several islands with extensive marshy fringes, which provide good nesting sites for waterbirds. Interestingly, Manjira was declared a sanctuary not for its large congregation of birds, but for its small population of the Mugger crocodile Crocodylus palustris (Vijaya Kumar and Choudhury 1994). An area of 2,800 ha between Singoor and Manjira Barrage was declared a crocodile sanctuary in June 1978 (Vijaya Kumar 1988-1992). In the mid-1980s, Manjira became known to bird watchers and an annual waterfowl count was initiated. The reservoir supports submergent and emergent vegetation. A narrow margin of Typha, Ipomoea and Acacia fringes the

waterline, while agricultural fields surround the reservoir and the river (Vijaya Kumar and Choudhury 1994). The river does not flow through the forested area. In the dry savannah type vegetation, scattered *Acacia, Prosopis*, *Tamarindus indicus* and *Azadirachta indica* are seen. The reservoir has several islands with extensive marshy fringes.

Manjira Wildlife Sanctuary qualifies as a Key Biodiversity Area of international significance because it meets one or more previously established criteria and thresholds for identifying sites of biodiversity importance (including Important Bird and Biodiversity Areas, Alliance for Zero Extinction sites, and Key Biodiversity Areas).

8. BIODIVERSITY RISK ASSESSMENT & RECOMMENDATIONS

Biodiversity Risk Assessment Standards are established to evaluate the potential impacts on biological diversity by assessing the sensitivity of ecological receptors, which includes specie and habitat separately. The sensitivity of these ecological receptors indicates their vulnerability to environmental changes induced by human activities. This sensitivity is influenced by several factors, such as the rarity of the species, population size, reproductive rates, and specific habitat requirements. Understanding these sensitivities is essential for assessing the significance of potential impacts on biodiversity. Below are the significance Tables 6 and 7 for habitat and species respectively.

Table 6: Impact Assessment Criteria- Habitat

Habitat Sensitivity/ Value		Magnitude of Effect on Baseline Habitats			
		Negligible	Small	Medium	Large
		Effect is within the normal range of variation	Affects only a small area of habitat, such that there is no loss of viability/ function of the habitat	Affects part of the habitat but does not threaten the long-term viability/ function of the habitat	Affects the entire habitat, or a significant portion of it, and the long-term viability/ function of the habitat is threatened.
Negligible	Habitats with negligible interest for biodiversity.	**Negligible**	**Negligible**	**Negligible**	**Negligible**
Low	Habitats with no, or only a local designation / recognition, habitats of significance for species listed as of Least Concern (LC) on IUCN Red List of Threatened Species, habitats which are common and widespread within the region, or with low conservation interest based on expert opinion.	**Negligible**	**Negligible**	**Minor**	**Moderate**
Medium	Habitats within nationally designated or recognised areas, habitats of significant importance to globally Vulnerable (VU) Near Threatened (NT), or Data Deficient (DD) species, habitats of significant importance for nationally restricted range species, habitats supporting nationally significant concentrations of migratory species and / or congregatory species, and low value habitats used by species of medium value.	**Negligible**	**Minor**	**Moderate**	**Major**
High	Habitats within internationally designated or recognised areas; habitats of significant importance to globally Critically Endangered (CR) or Endangered (EN) species, habitats of significant importance to endemic and/or globally restricted-	**Negligible**	**Moderate**	**Major**	**Critical**

Habitat Sensitivity/ Value		Magnitude of Effect on Baseline Habitats			
		Negligible	Small	Medium	Large
	range species, habitats supporting globally significant concentrations of migratory species and / or congregatory species, highly threatened and/or unique ecosystems, areas associated with key evolutionary species, and low or medium value habitats used by high value species.				

Table 7: Impact Assessment Criteria- Species

Baseline Species Sensitivity/ Value		Magnitude of Effect on Baseline Habitats			
		Negligible	Small	Medium	Large
		Effect is within the normal range of variation for the population of the species	Effect does not cause a substantial change in the population of the species or other species dependent on it	Effect causes a substantial change in abundance and/or reduction in distribution of a population over one, or more generations, but does not threaten the long term viability/ function of that population dependent on it.	Affects entire population, or a significant part of it causing a substantial decline in abundance and/or change in and recovery of the population (or another dependent on it) is not possible either at all, or within several generations due to natural recruitment (reproduction, immigration from unaffected areas).
Negligible	Species with no specific value or importance attached to them.	**Negligible**	**Negligible**	**Negligible**	**Negligible**

Baseline Species Sensitivity/ Value		Magnitude of Effect on Baseline Habitats			
		Negligible	Small	Medium	Large
Low	Species and sub-species of LC on the IUCN Red List, or not meeting criteria for medium or high value.	**Negligible**	**Negligible**	**Minor**	**Moderate**
Medium	Species on IUCN Red List as VU, NT, or DD, species protected under national legislation, nationally restricted range species, nationally important numbers of migratory, or congregatory species, species not meeting criteria for high value, and species vital to the survival of a medium value species.	**Negligible**	**Minor**	**Moderate**	**Major**
High	Species on IUCN Red List as CR, or EN. Species having a globally restricted range (i.e. plants endemic to a site, or found globally at fewer than 10 sites, fauna having a distribution range (or globally breeding range for bird species) less than 50,000 km^2), internationally important numbers of migratory, or congregatory species, key evolutionary species, and species vital to the survival of a high value species.	**Negligible**	**Moderate**	**Major**	**Critical**

To understand the biodiversity impacts associated with Neuland Laboratories Ltd, an initial qualitative analysis was conducted following the principles outlined by the TNFD and the materiality assessment framework required in Step 1A of the Science Based Targets Network (SBTN). This analysis involved breaking down Neuland's value chain into three main sectors: upstream, direct operations, and downstream. The impact levels of each sector were assessed using a Materiality Screening approach to identify key areas where biodiversity is affected, including species and habitats.

8.1 Biodiversity Risk Mapping of Neuland Laboratories

A. UPSTREAM ACTIVITIES

Impacts due to the upstream value chain may include:

- ***Raw Material Procurement***

The use of synthetic raw materials reduces direct pressure on biodiversity by minimising the exploitation of natural flora and fauna, prevent habitat destruction caused by deforestation, mining, or agricultural expansion. However, while the use of synthetic materials reduces the pressure on biodiversity caused by harvesting natural resources, the production of synthetic chemicals often involves energy-intensive processes and chemical reactions that may indirectly impact biodiversity. These impacts include:

- **Energy Consumption**: The production of synthetic raw materials typically requires significant energy inputs, which may rely on fossil fuels. This contributes to greenhouse gas emissions, climate change, and habitat loss.
- **Chemical Waste Generation**: The manufacturing of synthetic chemicals can produce hazardous waste that, if not managed properly, could contaminate ecosystems.

- ***Supplier Selection and Practices***

The selection of suppliers significantly influences the environmental footprint of upstream activities, as suppliers engaged in the production of synthetic materials may release pollutants into air, water, or soil. Such emissions can harm local ecosystems and reduce biodiversity. Additionally, suppliers employing unsustainable practices, such as improper waste disposal, exacerbate ecosystem degradation by contributing to pollution and resource depletion.

- ***Pollution from Suppliers***

Even though Neuland does not directly source natural raw materials, pollution from its

suppliers' operations can still have an adverse impact on biodiversity:

- **Air Pollution:** Emissions from chemical manufacturing facilities can lead to acid rain or smog formation, which negatively affects plant and animal life.
- **Water Pollution:** Discharge of untreated wastewater containing harmful chemicals into rivers or lakes can disrupt aquatic ecosystems and kill marine species.
- **Soil Contamination:** Improper disposal of industrial waste by suppliers can degrade soil quality, affecting terrestrial organisms.

- ***Transportation of Raw Materials***

The transportation of raw materials also has implications for biodiversity due to:

- **Emissions:** Fossil fuel-powered vehicles used for transportation emit greenhouse gases that contribute to global warming and habitat destruction.
- **Accidental Spills or Leaks:** Transportation accidents involving hazardous chemicals could result in spills that contaminate nearby ecosystems.
- **Noise Pollution:** Increased transportation activities create noise pollution that disturbs wildlife behaviour patterns especially if the transport route passes through or near to any eco-sensitive area.

It is understood the transportation of raw material is outsourced to a third-party vendor and therefore. In case, third-party vendors do not adhere to sustainable practices or regulations, may exacerbating environmental damage during transportation processes.

SIGNIFICANCE OF IMPACTS

While Neuland's upstream value chain may not directly engage with biological materials or be situated near biodiversity-sensitive areas, there exists a potential risk of receptor sensitivity effects on both species and habitats due to chemical exposures stemming from supplier processes. The chemicals released during production can persist in the environment and bioaccumulate within food chains, posing threats to target species as well as non-target organisms. Furthermore, even if individual suppliers are not located near sensitive ecological zones, the cumulative impacts from various sources across a landscape can result in significant ecological degradation over time. This underscores the importance of considering indirect effects and cumulative risks associated with chemical exposure in the assessment therefore, the above the overall significance of impacts is anticipated to be **Medium** for Species and Habitat for upstream activities.

B. OPERATIONAL ACTIVITIES

The operational activities of pharmaceutical companies can have significant impacts on biodiversity. These impacts are primarily driven by their manufacturing processes, waste generation and management, and energy consumption as detailed below:

- ***Chemical Emissions Due to Manufacturing Processes***

The manufacturing involves complex chemical reactions, the use of raw materials, and the production of active pharmaceutical ingredients. While these processes are essential for drug production, they can have adverse effects on biodiversity if not managed responsibly. The manufacturing process often involves the release of volatile organic compounds, hazardous air pollutants, and other chemical emissions into the atmosphere. These emissions can contribute to air pollution, which indirectly affects ecosystems by altering climatic conditions.

Neuland has implemented measures to reduce direct greenhouse gas emissions, achieving a 2% reduction in 2022 such as.

- Multistage scrubbers are installed and operated for process emissions.
- Cyclone separators followed by back filters are provided as pollution control equipment to coal-fired boilers.
- Vent condensers/nitrogen blanketing provided for all solvent storage tanks.
- Chemicals/solvents are being handled in a closed pumping system

Above measures indicate efforts to minimise air pollution caused by manufacturing processes involving chemicals.

- ***Water Usage in Manufacturing:***

Pharmaceutical facilities require significant amounts of water for their production processes, which can lead to excessive withdrawal from local water sources. This over-extraction may result in habitat degradation for aquatic species and disrupt ecosystems that depend on these water bodies. Additionally, the introduction of non-native or invasive plant species for landscaping within industrial units and surrounding zones could further disturb local biodiversity.

In the case of Neuland, the water requirements are met through tankers as there is no government-supplied water available. While receipts are collected for water purchases, Neuland does not verify the source of the water being supplied. It is likely that this water is sourced either from underground reserves or nearby streams, which could have significant implications for local biodiversity and ecosystem health due to unchecked extraction practices.

- ***Waste Generation and Management***

Pharmaceutical operations generate diverse waste types, including solid waste, liquid effluents, and hazardous by-products. Improper disposal of these wastes can severely impact biodiversity by contaminating soil and groundwater resources. This contamination harms microorganisms essential for ecosystem health and disrupts aquatic ecosystems when active pharmaceutical ingredients (APIs) enter waterways through untreated effluents. APIs in water bodies may interfere with fish reproduction cycles or lead to bioaccumulation in predators.

Solid waste from API production often includes salts generated during evaporation processes. To address these challenges, Neuland has implemented Zero Liquid Discharge (ZLD) approach across all its manufacturing including R&D facilities to eliminate liquid waste discharge into natural water bodies, thereby reducing contamination risks. However, ZLD systems require continuous monitoring to ensure their effectiveness.

Neuland Pharma has adopted a "Zero Liquid Discharge" (ZLD) approach across all its manufacturing plants, ensuring no liquid waste is discharged into the environment. Approximately 94% of treated water is recycled for industrial reuse, while solid waste from wastewater treatment is disposed of responsibly. These practices significantly mitigate water pollution risks associated with chemical usage.

Neuland has also invested in advanced wastewater treatment technologies such as Multiple Effect Evaporators (MEE) and Agitated Thin Film Dryers (ATFD). These technologies treat wastewater to meet environmental standards before its release back into the environment. Additionally, the salts produced during treatment are either sent to Treatment Storage Disposal Facilities (TSDFs) or utilized as co-fuels in cement industries. This approach reduces landfill dependency but necessitates careful monitoring to prevent secondary pollution.

- ***Energy Consumption***

Pharmaceutical manufacturing facilities that require substantial energy inputs for processes such as chemical synthesis, heating, cooling, and maintaining controlled environments. While, Neuland has made significant progress in enhancing operational efficiency through advanced technologies and sustainability practices, its continued reliance on traditional energy sources presents risks to biodiversity. These risks include habitat degradation, contributions to climate change, and pollution.

SIGNIFICANCE OF IMPACTS

Neuland Pharma's strategic positioning away from biodiversity-sensitive regions, coupled with its reliance on non-biological raw materials, indicates a conscientious approach to

environmental stewardship. The company has adopted several initiatives aimed at minimizing its ecological footprint, including a Zero Liquid Discharge (ZLD) system and stringent air pollution control measures. These efforts suggest that the company's operations have a **Negligible** impact on local species and habitat.

C. DOWNSTREAM ACTIVITIES

- ***Product transportation and distribution***

It is understood the transportation of finished products is outsourced to a third-party vendor and therefore. In case, third-party vendors do not adhere to sustainable practices or regulations, may exacerbating environmental damage during transportation processes.

- ***End-of-life product disposal or recycling***

Downstream activities refer to processes that occur after the production and distribution of pharmaceutical products. This includes how products are used by consumers and eventually disposed of or recycled at the end of their lifecycle. For pharmaceuticals, this typically involves:

- Unused or expired medications being discarded improperly (e.g., flushed down toilets, thrown in regular trash).
- Packaging materials being disposed of without proper recycling.
- Byproducts from drug use entering wastewater systems through human excretion.

SIGNIFICANCE OF IMPACTS

The downstream operations associated with Neuland pose significant challenges related to receptor sensitivity and ecological impacts and require rigorous oversight and commitment to sustainable practices from all stakeholders, particularly third-party vendors, to minimize potential environmental harm. Considering the scope of vendor performance and liability for negligence is intrinsically linked to Neuland's overall business perspective, the impact on both species and habitats may vary. While it is essential to establish a comprehensive agreement and framework for risk mitigation, such measures cannot entirely eliminate risk. Therefore, Neuland must take proactive steps in managing these risks by conducting thorough due diligence, monitoring supplier performance, and developing contingency plans to address unforeseen issues or breaches of contract effectively.

9. SUMMARY OF RISK ASSESSMENT

Based on the site visits and the above assessment summary of risk with recommendations has been outlined in Table 8.

Table 8: Summary of Risk Assessment

Risk Category	Identified Risk	Phase	Potential Impact on Biodiversity	Best Practices Observed / Recommendations
Water Sourcing & Use	Unclear water source from tankers	Operations	Possible over-extraction from groundwater or unsustainable surface water sources affecting local aquatic ecosystems.	- Conduct water source assessment to ensure proper documentation and verification of water sources used by tankers. - Industry should approach municipal corporations for water supply through the mission Bhagiratha scheme as a long-term plan.
Supply Chain Impact	Biodiversity not included in supplier agreements	Upstream	Upstream suppliers may contribute to biodiversity loss (e.g., habitat destruction, pollution) if biodiversity criteria are not considered.	- Although Neuland's Supplier Code of Conduct mandates suppliers to address biodiversity impacts. "Supplier shall aim to understand its impacts on biodiversity, reducing and mitigating its footprint wherever possible.", Neuland has a responsibility to evaluate supplier compliance with biodiversity standards and may conduct supplier assessments to evaluate suppliers for compliance with biodiversity standards

				using tools like the Biodiversity Impact Metric or similar frameworks. - Update supplier agreements to include biodiversity protection clauses. Mandate suppliers to adhere to biodiversity-friendly practices, such as avoiding habitat destruction, minimising pollution, and sourcing sustainably - Require biodiversity consideration and initiatives from key suppliers. - Educate small suppliers on sustainable practices and provide resources to help them transition toward more biodiversity-conscious operations for mutual goals.
Air Pollution	Emissions from production facilities	Operations	Potential impact on nearby ecosystems, air quality, and species health.	- At present in Neuland multistage scrubbers are installed and operated for process emissions. - Cyclone separators followed by back filters has been provided as a pollution control equipment to coal fired boiler. - Vent condensers/nitrogen blanketing are provided

				for all solvent storage tanks. - Chemicals/solvents are being handled in a closed pumping system.
Waste Management	Hazardous waste disposal	Operations	Improper disposal may lead to contamination of soil and water, affecting plant and animal life.	- Waste is being disposed to authorized waste facility vendors for co-processing as a alternate fuel. - Client has achieved zero landfill waste with platinum rating by competent third-party agency. - Client is following a standard SOP for collection, storage, transport and disposal of Hazardous and Non-hazardous waste. - It is recommended to ensure third-party waste handlers follow biodiversity-conscious practices.
Vehicle Traffic & Speed	High-speed transport of raw materials and finished goods	Upstream Downstream	- Increased roadkill risk for wildlife. - Noise pollution disrupting local species, particularly nocturnal animals.	- Ensure all vendors implement speed restrictions near eco-sensitive areas. Encourage suppliers to use eco-friendly transport practices (EVs, route optimization).

10. ACTIVITIES RELATED TO BIODIVERSITY OFFSETTING

The following activities can be considered while offsetting the biodiversity impact.

Table 9: Initiatives to Offset Biodiversity Impact

Suggested Initiatives to Offset Biodiversity Impact
Undertake afforestation activity in the nearby areas to restore natural forest, control of invasive species and plant more native flora.
Support local Forest office for protecting wildlife of Manjira Wildlife Sanctuary.
Funding local conservation projects or initiatives through offset programs.
Involve suppliers, vendors, staff and local communities in conservation efforts.
Set-up systems to monitor biodiversity gains over time and evaluating the success of offset projects against established metrics.

11. LIMITATIONS

This Biodiversity Impact Assessment has been prepared based on the information made available by Neuland Laboratories Ltd., site observations, publicly accessible data sources, and interactions with relevant stakeholders during the assessment period. While all reasonable efforts have been made to identify and evaluate biodiversity-related risks and impacts, certain limitations remain:

Water sourcing data was limited due to a lack of traceability regarding the origin and sustainability of tanker-supplied water.

Upstream supplier practices were assessed based on available agreements and general sustainability policies; direct field verification or biodiversity-specific audits of suppliers were not conducted.

Biodiversity baselines for the surrounding area were inferred using secondary data and proximity analysis, as primary ecological surveys were outside the scope of this assessment.

Cumulative impacts from nearby industrial activities and urban development were not comprehensively assessed due to a lack of regional-level biodiversity impact data.

As such, this report presents a qualitative and preliminary evaluation and should be complemented with future in-depth studies, especially if there are changes in operations, expansion activities, or renewable energy integration.

12. CONCLUSION

Neuland Pharma has exhibited **commendable environmental responsibility** through its biodiversity risk assessment, reinforcing its role as a sustainability-conscious pharmaceutical manufacturer. **With no significant biodiversity-related risks identified**, the company is starting from a strong baseline. By adopting a few additional forward-looking measures—particularly in supply chain engagement and water sourcing—Neuland can further embed biodiversity safeguards into its operations and value chain.

Importantly, this assessment aligns with the expectations of leading ESG and climate disclosure frameworks such as the **CDP (Carbon Disclosure Project) and S&P Global Corporate Sustainability Assessment (CSA),** supporting Neuland's broader sustainability reporting objectives. This approach not only strengthens its ESG credentials but also enhances its long-term alignment with evolving regulatory and stakeholder expectations in sustainability.

Earthood

www.earthood.in

Earthood Services Limited
1203-1205, 12th Floor,
EMAAR Digital Greens, Tower B
Sector – 61, Gurgaon 122011
Web www.earthood.in |