WATER RISK ASSESSMENT REPORT

Alumex PLC – Sapugaskanda & Ekala Facilities

ALUMEX®
ULTIMATE IN ALUMINIUM PROFILES

1. COMPANY WATER DEPENDENCY AND CONSUMPTION PROFILE

Alumex PLC operates aluminium extrusion and surface finishing facilities where water is a critical process input rather than a general utility. The highest dependency arises from anodizing operations and pre-treatment stages in powder coating processes, where water is used in rinsing cycles, chemical drag-out control, surface preparation, and process stability control.

These operations require water with stable chemical characteristics, particularly controlled pH, low turbidity, and minimal ionic variation. As a result, water is directly linked to product quality outcomes, where even small fluctuations can influence coating consistency and defect rates.

During the FY 2024/25 period, total water consumption was approximately 111 million litres. The majority of this demand was supplied through the municipal water system delivered via the LINDEL Industrial Zone, accounting for approximately 86 million litres. Groundwater abstraction from the Ekala facility contributed approximately 24 million litres.

This distribution confirms a strong structural dependency on municipal supply, which is indirectly sourced from the Kelani River Basin. Groundwater plays a secondary role and provides limited system buffering capacity.

2. WATER SYSTEM STRUCTURE AND WATERSHED LINKAGE

Although Alumex PLC does not directly abstract water from natural sources at its Sapugaskanda facility, it is fully embedded within a three-layer water dependency system.

The first layer is the Kelani River Basin, which serves as the primary hydrological source. The second layer is the LINDEL Industrial Zone water treatment and distribution system, which abstracts and treats river water before distribution. The third layer is the Alumex operational system, where treated water is used in industrial processes.

This structure means that Alumex PLC is indirectly dependent on river hydrology and watershed conditions, even though abstraction occurs through a treated water interface. Any changes in upstream river quality or flow conditions ultimately influence the stability of supplied water.

From a systems perspective, this creates a coupled natural–engineered dependency model where industrial water stability is influenced by both environmental conditions and treatment system performance.

3. HYDROLOGICAL AND LIMNOLOGICAL CHARACTER OF THE KELANI RIVER BASIN

The Kelani River Basin is a tropical monsoonal system characterized by high hydrological variability and strong seasonal flow fluctuations. From an applied hydrology perspective, the basin responds rapidly to rainfall events, resulting in significant short-term changes in discharge, sediment transport, and water quality.

In the upper catchment, the river maintains relatively stable ecological conditions with higher oxygen levels and lower pollutant concentrations. However, in the downstream sections where industrial and urban activities are concentrated, the system undergoes a transformation into a more stressed aquatic environment.

This downstream zone is characterized by increased nutrient loading, higher suspended sediment concentrations during rainfall events, and reduced natural self-purification capacity due to cumulative anthropogenic pressure.

From a limnological perspective, this indicates that the river's ability to naturally stabilize water quality is weakened in downstream regions, resulting in higher variability and lower resilience to pollution inputs.

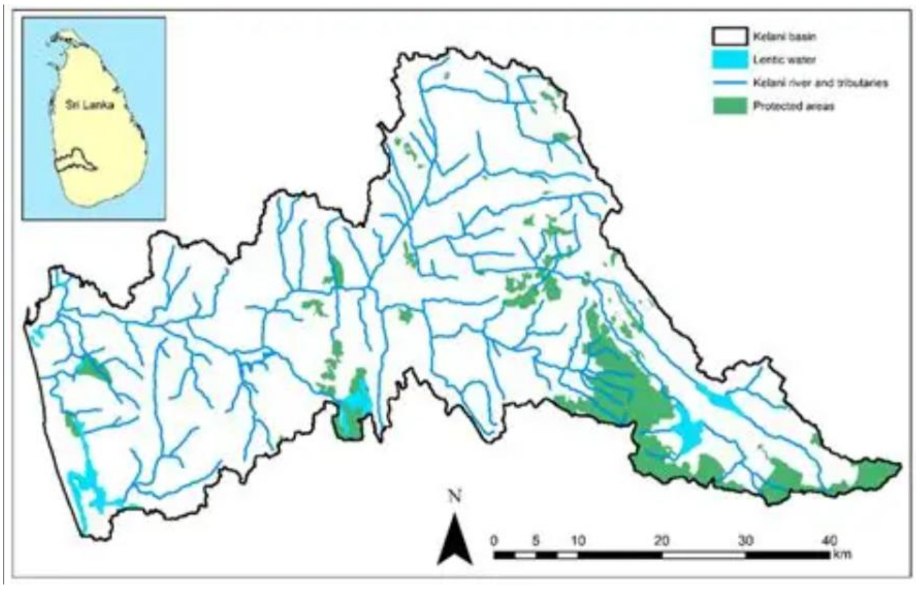

Figure 1: Kelani River Basin

4. WATERSHED WATER STRESS AND SYSTEM VARIABILITY

The Kelani River Basin is subject to multiple overlapping stress factors, including urban expansion, industrial discharge, land-use changes, and climate-driven variability.

From a hydrological systems perspective, the basin is no longer stationary. Its baseline conditions are gradually shifting over time, meaning historical water quality patterns are no longer fully representative of future conditions.

Seasonal variability further amplifies this effect. During high rainfall periods, increased runoff leads to elevated turbidity and sediment loads. During dry periods, reduced flow conditions result in higher concentration of dissolved pollutants due to limited dilution capacity.

This results in a system where water quality is inherently variable and increasingly sensitive to external environmental conditions.

For Alumex PLC, this variability is indirectly transmitted through the LINDEL treatment system, which must continuously adapt to changing raw water characteristics.

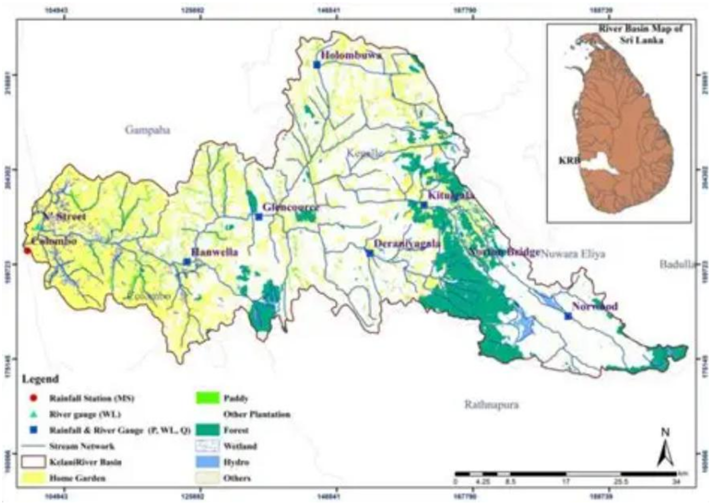

Figure 2: Kelani River Basin- Geological Status

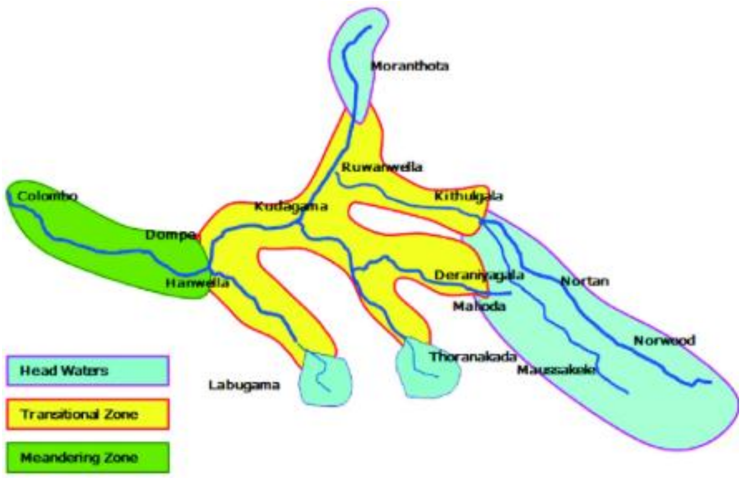

Figure 3: Sub Basin of Kelani River

5. INTERPRETATION OF WATER DEPENDENCY DATA

The water consumption profile for FY 2024/25 shows a stable overall demand pattern, but the internal structure reveals a significant shift toward reliance on municipal water supply.

This increasing dependence on LINDEL-supplied water indicates a consolidation of exposure to a single watershed-linked system. At the same time, groundwater usage has decreased, reducing the role of decentralized buffering within the system.

Although total water usage remains stable, the risk profile is increasing due to higher concentration of dependency on one external system linked to the Kelani River Basin.

From a resilience perspective, this reduces redundancy and increases sensitivity to external hydrological and water quality fluctuations.

6. FUTURE WATER RISK SCENARIOS AND BUSINESS CONTINUITY EXPOSURE

Future water risk for Alumex PLC is primarily driven by variability in watershed conditions rather than absolute water scarcity.

During El Niño conditions, reduced rainfall leads to lower river flow and reduced dilution capacity. This results in increased concentration of dissolved pollutants in the river system, which increases treatment intensity requirements and may affect the stability of treated water quality.

During high rainfall periods, increased surface runoff results in elevated turbidity and sediment loads. These conditions can temporarily challenge treatment efficiency and increase variability in supplied water quality.

In the event of upstream pollution incidents, localized contamination events may also affect raw water quality entering the treatment system, depending on severity and dilution conditions.

In all cases, the primary risk to operations is not complete water supply interruption but variability in water quality affecting process-sensitive operations such as anodizing and pre-treatment processes.

7. RISK MITIGATION AND RESILIENCE STRATEGY

Risk mitigation is focused on reducing sensitivity to water quality variability rather than increasing water volume security.

Operational efficiency improvements in rinsing and water use processes can reduce overall water intensity per unit of production. This reduces exposure to external variability conditions.

Maintaining groundwater as a secondary source provides partial system redundancy, although its role is limited compared to municipal supply dependence.

Improved monitoring of incoming water quality allows early detection of deviations in key parameters such as turbidity, conductivity, and pH, enabling proactive process adjustments.

At a strategic level, long-term resilience depends on enhancing internal process tolerance to variable water conditions and increasing recycling and reuse capacity to reduce dependence on external supply stability.

8. FUTURE STRATEGIC OUTLOOK

The Kelani River Basin is expected to experience increasing hydrological variability over time due to cumulative environmental pressures and climate variability. This will gradually reduce the stability of baseline water quality conditions and increase the importance of treatment system performance.

As a result, industrial users within the basin will increasingly operate in a condition where water quality consistency becomes a primary constraint rather than water availability.

For Alumex PLC, future water management will therefore shift from supply assurance to variability management, where the key objective is maintaining process stability under fluctuating watershed conditions.

This requires an integrated approach combining operational efficiency, process control, and adaptive water management strategies.

9. CONCLUSION

Alumex PLC operates within a water dependency system that is strongly linked to the Kelani River Basin through the LINDEL industrial water supply network. While current water availability is stable, the watershed is experiencing increasing environmental and hydrological stress, resulting in higher variability in water quality conditions.

The most significant water-related risk is not water scarcity but the increasing instability of water quality due to watershed-level changes. This directly affects process-sensitive operations, particularly anodizing and surface treatment stages.

Water stewardship at Alumex PLC therefore requires an integrated understanding of watershed hydrology, limnological system behavior, and industrial process sensitivity. Continued focus on efficiency, monitoring, and adaptive control will be essential to ensure long-term operational resilience under changing environmental conditions.