Total Care & Support Limited

Proposal for G Cloud 15

Lot 2b Application



Sovereign IoT Management, Monitoring & Analytics Service

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Supplier Product and Service Document

Supplier: Total Care & Support Ltd
Solution: Sovereign IoT Management, Monitoring, & Analytics Solution (LoRaWAN®-enabled)

1 Solution Overview

The Smart Sensor Management & Monitoring Solution by Total Care & Support Ltd is a scalable platform designed to monitor environmental, operational and asset-related conditions across a wide range of environments. The solution is applicable to residential and social housing portfolios, public-sector estates, smart city, education, healthcare, and environmental use cases, removing the need for manual inspections, detecting risks early to prevent incidents and supporting regulatory compliance.

The service platform applies rules-based analytics and trend analysis to incoming telemetry data to identify abnormal conditions, risks and changes in behaviour over time. Reporting thresholds are agreed with each individual customer. Outputs are presented as prioritised alerts, together with dashboards and reports that support timely and evidence-based operational decision-making.

The solution uses low-power wireless sensors connected via LoRaWAN® (Long-Range Wide Area Network) technology to collect data such as temperature, humidity, air quality, occupancy, energy usage, and water presence. Data is transmitted securely using AES-128 encryption to a cloud-based platform where it can be visualised, analysed, and integrated into existing customer systems. This enables organisations to identify emerging risks, improve operational efficiency and make evidence-based decisions.

The solution is delivered as a fully managed, cloud-hosted Software-as-a-Service (SaaS) platform. Sensor data is ingested, processed, and stored within the platform, removing the need for customers to deploy or manage underlying infrastructure.

UK-hosted cloud deployment options are fully supported, enabling organisations to meet data residency, sovereignty and public-sector governance requirements.

The system supports both self-managed and supplier-supported operating models, allowing customers to determine how actively they wish to manage alerts, insights and interventions. The service is available as a turnkey solution, where Total Care Support Ltd provides the cloud-based management and analytic platform, sensors, LoRaWAN connectivity and support services as a bundle under a single managed service. If a customer has an existing estate of IoT sensors that needs to be managed, then these can be integrated into the service platform ensuring that there are no stranded assets.

Service features:

- Real-time IoT sensor data ingestion and monitoring across distributed estates
- AI-assisted anomaly detection and trend analytics for early risk identification
- Configurable alerts and notifications supporting incident response and prioritisation
- Role-based dashboards providing secure operational and management visibility
- UK cloud-hosted SaaS platform supporting data residency and governance
- LoRaWAN and multi-vendor sensor integration for flexible IoT deployments
- Historical analytics, reporting and audit data supporting compliance requirements
- API-first data integration with existing customer systems and platforms
- Prioritised risk scoring to support operational decision-making and intervention
- Audit-ready data and reporting supporting compliance and regulatory requirements

2 Benefits to Public-Sector and Organisational Customers

The service platform is designed to deliver consistent operational outcomes across sectors, including reduced reliance on manual inspections, faster detection of incidents and emerging risks, improved visibility across estates and assets and the ability to scale oversight without proportional increases in staffing. These outcomes support more efficient use of operational resources and provide auditable evidence to support compliance and reporting requirements.

- **Regulatory & Policy Support:** Assists organisations in meeting statutory, regulatory, and internal policy requirements. Assists landlords in meeting statutory requirements such as Awaab's Law and damp/mould reporting obligations.
- **Preventative Maintenance:** Early identification of risks reduces emergency interventions, callouts and reactive costs.
- **Operational Efficiency:** Data-driven alerts and insights enable more effective deployment of staff and resources, together with more effective maintenance scheduling.
- **Sustainability:** Supports energy efficiency initiatives and environmental reporting.
- **Occupant / Tennant Wellbeing:** Improves comfort, safety, and environmental quality across monitored spaces. Improves indoor air quality, comfort and safety across housing stock.
- **Financial Impact:** Enables targeted and predictable interventions that help control operating costs.

Service Benefits:

- Reduce manual inspections using continuous IoT monitoring and automated alerts
- Detect risks earlier to prevent incidents and unplanned reactive maintenance

- Prioritise operational actions using AI-assisted risk scoring and alerts
- Provide clear evidence for audits, inspections and regulatory reporting
- Reduce maintenance costs by detecting failures and hazardous conditions early
- Enable faster incident response with real-time alerts and notifications
- Optimise resource deployment by targeting interventions based on data
- Meet data residency and governance requirements through UK cloud hosting

3 Solution Architecture

The Smart Sensor Management & Monitoring Solution is delivered through a centrally managed, cloud-hosted IoT management and analytics platform that provides estate-wide visibility and insight across large numbers of distributed sensor/data collection assets.

The platform has been developed by UK-based engineering teams and is operated as a fully sovereign service, with all data stored, processed, and managed within UK-hosted cloud infrastructure. This ensures alignment with public-sector data residency, sovereignty and governance requirements.

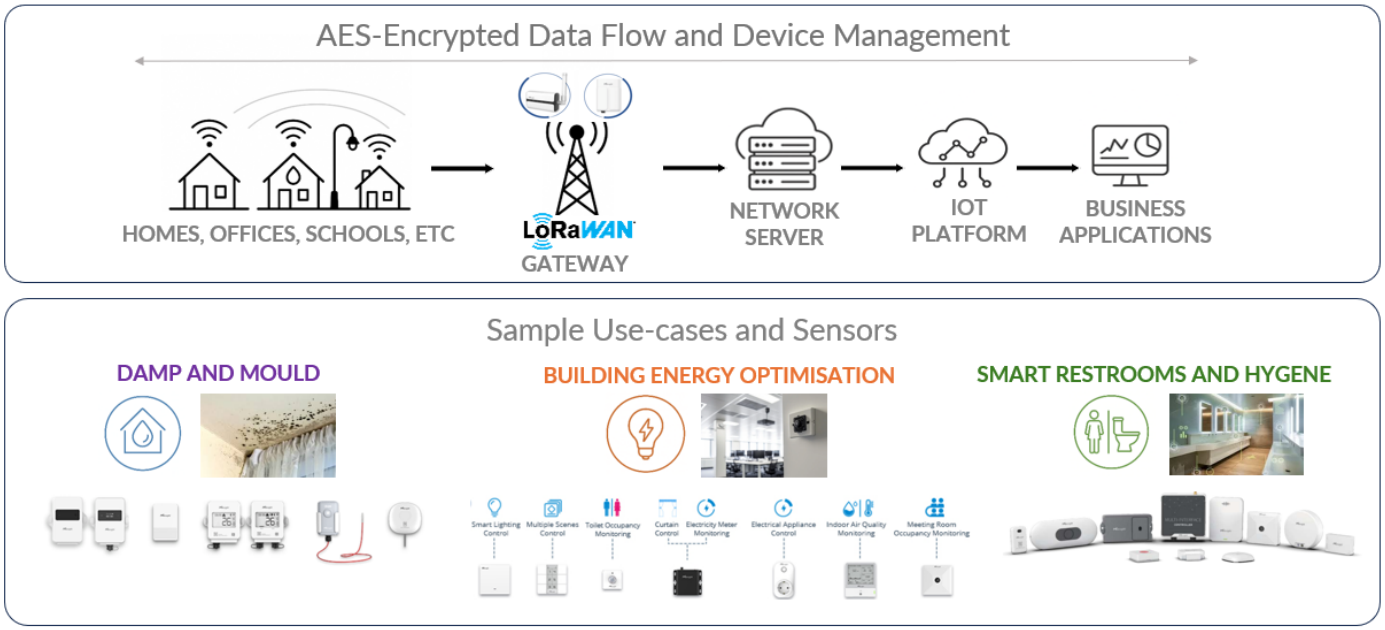
Each customer deployment can be provisioned as a dedicated single-tenant service instance, logically and operationally isolated within the UK-hosted cloud environment. This single-tenancy model provides enhanced data separation, security assurance and governance control, and supports public-sector requirements for workload isolation, auditability and sovereignty.

Using a blend of rules-based analytics and AI enhanced trend and pattern recognition, the service continuously evaluates sensor data to highlight potential risks, anomalies, and behavioural changes across the devices and estates being monitored. The insights generated are delivered via configurable dashboards and reports, giving client teams clear, actionable intelligence to guide decision making.

The service platform manages secure device onboarding, telemetry ingestion, analytics, alerting, dashboards and integration with existing customer systems. Users access the service through role-based dashboards which enable operational and management teams to focus and act on insights without the need to manage the underlying connectivity or infrastructure.

The solution is built on the LoRaWAN® ecosystem, which enables long-range, low-power communication between distributed sensors and gateways. This makes it suitable for large estates, multi-building environments across towns and cities, and locations where wired connectivity is impractical.

The architecture is designed for reliability, scalability and long-term operational stability, with remote device management and over-the-air updates reducing the need for on-site intervention.



Core Components:

- **Sensors:** Capture a wide range of environmental and operational data including (but not limited to) temperature, humidity, air quality, motion, occupancy, energy consumption, equipment status, water levels, and leak detection.
- **Network Server & Cloud Platform:** Manages device authentication, AES-128 encrypted data transmission, data storage, analytics, and integration services. The platform is delivered as a private, cloud-hosted service distributed across two geographically separate UK locations to provide resilience, high availability and continuity of service.
- **Gateways:** Provide secure connectivity between sensors and the network, supporting both indoor and outdoor deployment scenarios.
- **Applications & Interfaces:** Dashboards, alerts, reports, and APIs that enable customers to monitor conditions and configure thresholds together with the ability to integrate data into third-party systems. Dashboards and views are configurable by role, enabling operational, managerial and analytical users to access relevant information.

The platform is designed to integrate with existing customer systems through standard APIs and data export mechanisms. Telemetry data, alerts and insights can be shared via API with third-party applications, enabling organisations to incorporate sensor intelligence into established operational process, reporting and compliance workflows. The customer polls the service platform to pull data across a secure internet link. Typically, in use cases envisaged above the polling period would be every 30-60 minutes, though greater frequency can be supported upon discussion.

This approach ensures the platform complements existing technology estates.

4 Application Areas and Use Cases

The platform supports a broad and extensible range of use cases. The solution can be extended to additional use cases as organisational needs evolve, without requiring fundamental changes to the underlying service platform.

Common applications include:

4.1 Environmental Condition Monitoring, Damp and Mould Prediction

Sensors: Temperature, humidity, air quality
Purpose: Monitor internal environmental conditions to identify early indicators of condensation, damp, mould growth and poor indoor air quality. This capability is particularly relevant in residential and social housing settings where persistent environmental issues can create health and compliance risks.

Value: In housing deployments; this use case supports compliance with Awaab's Law and the Social Housing Regulation Act 2023 by enabling earlier identification of conditions associated with damp and mould and providing an evidence base for investigation, intervention and reporting. In other public-sector and commercial environments, the same monitoring capability supports building health, asset protection and planned maintenance. This helps to reduce avoidable defects, health impacts and unplanned repair activity.

4.2 Facilities and Hygiene Management

Sensors: Occupancy, fill-level, odour, leak detection
Purpose: Provide ongoing visibility of usage levels and environmental conditions within shared or high-footfall facilities, enabling alignment of cleaning and maintenance activity with actual demand rather than fixed schedules.

Value: Supports a shift from routine to demand-led cleaning rotas by informing when facilities require attention and when intervention can be deferred. This improves hygiene outcomes and service availability while helping to manage staffing, consumable usage and operating costs. Data generated through the platform can also be used to demonstrate service performance and inform facilities management planning.

4.3 Energy Optimisation and Asset Efficiency

Sensors & Devices: Occupancy, thermostats, smart sockets, lighting controls
Purpose: Optimise energy use by linking elements such as heating, lighting and power consumption to how spaces and assets are used in practice.

Value: Helps organisations reduce energy demand and associated carbon emissions while supporting wider sustainability and net-zero programmes. The resulting data supports energy management, cost control and reporting. It can be used to compare performance across buildings or assets over time, while maintaining appropriate / optimal levels of occupant comfort.

4.4 Water and Leak Detection, Flood and Drainage Risk Monitoring

Sensors: Water level, leak detection
Purpose: Monitor water presence and drainage conditions to identify leaks, blockages, or abnormal water behaviour before they escalate into more serious incidents.

Value: Enables earlier response to water-related issues, reducing the likelihood of significant damage or service disruption. By maintaining a record of alerts and events, organisations gain greater visibility of new or recurring issues. Organisations can then prioritise preventative maintenance activity and are better equipped to provide evidence of incident history for asset management or insurance purposes.

4.5 Behavioural and Safeguarding Monitoring

Sensors: Vape detectors, motion sensors
Purpose: Identify activity patterns or environmental signals that may indicate inappropriate use of spaces or potential safeguarding concerns in designated areas.

Value: Provides timely information to support intervention where required, without relying on routine patrols or manual reporting. The data can be used to support incident investigation, inform local policy decisions and strengthen safeguarding arrangements in environments such as education and schools, healthcare and public buildings.

5 Deployment, Operation, and Support Model

5.1 Data Handling and Management

- **Data collection:** Sensor data is captured as time-stamped telemetry and securely transmitted to the cloud management platform. The platform supports both near real-time data ingestion for monitoring and alerting, together with buffered or batch processing where connectivity is intermittent.

- **Processing and storage:** Data is processed and stored within the UK-hosted cloud platform to support live monitoring, historical analysis, reporting and compliance.

- **Resilience and backup:** Platform data is protected through routine backup and resilience measures aligned with public-sector service delivery expectations. Historical data retention and archiving can be configured to align with organisational and regulatory requirements.

- **Data access and export:** Customers can access and export raw sensor data, alerts and historical records via dashboards or APIs. This supports independent analysis, reporting or integration with other systems.

- **Access control:** All data access and export is governed through role-based access control (RBAC), ensuring users can only view or download information appropriate to their role and responsibilities.

5.2 Onboarding Support & Deployment

Every deployment is approached collaboratively. Total Care & Support Limited acts as both technology partner and delivery integrator, aligning the rollout with each Member's operational priorities whether damp and mould compliance, energy management or leak prevention.

Our approach emphasises:

- **Simplicity of deployment:** battery-powered, wireless devices installed without invasive works.
- **Scalability:** a consistent method that works for 20 properties or 20,000.
- **Security and compliance:** encrypted data transfer and GDPR-compliant handling.
- **Partnership working** joint planning with customers teams and contractors to ensure buy-in and ownership.

Phase 1: Discovery & Design (2-4 weeks)– Defines the technical and operational scope, assessment of physical environments, use cases, and wireless coverage requirements. Activities include:

- **Kick-off and governance setup:** confirming project objectives, timelines, communication protocols, and key contacts.
- **Property and asset review:** analysis of building types, construction materials, and risk categories (e.g., older stock prone to condensation).
- **LoRaWAN coverage planning:** assessment of gateway placement and network backhaul options. (If required)
- **Integration scoping:** identifying whether data should feed into existing platforms other than the TCS management & monitoring service, Computer Aided Facilities Management (CAFM) systems, or compliance platforms.
- **Deployment plan:** establishing the number and type of sensors per location or property and creating a high-level rollout schedule.

The output is a detailed Implementation Plan approved jointly with the Member, forming the baseline for delivery.

Phase 2: Procurement and Configuration (2–3 weeks)

Once design approval is complete, equipment lists will be compiled and any additional procurement completed with certified suppliers. Key steps:

- Pre-configured sensors and gateways are allocated unique IDs for inventory control.
- Devices are bench-tested to verify connectivity, signal strength, and battery status.
- Configuration parameters (reporting interval, alert thresholds) are set in advance, reducing time on site.
- Installation packs and method statements are prepared and reviewed under the Member's H&S framework.

This pre-assembly ensures that most devices are delivered "ready to install", shortening installation time and minimising any disruption at the installation location.

Phase 3: Installation and Commissioning (4–8 weeks, scale dependent)

Installation is carried out by qualified engineers familiar with public sector environments.

- Sensors are mounted discretely commonly on walls or ceilings using adhesive or minimal fixings.
- No rewiring or power supply is needed; units are battery operated with multi-year life expectancy.
- Each device is registered on the cloud network and tested for data transmission integrity using AES-128 encryption.

Because installation is non-intrusive, properties remain occupied, and average on-site time per location is typically under 30 minutes.

Phase 4: Platform Setup, Testing and Training (1–2 weeks)

Following installation, the management platform is configured.

- Sensor data streams are verified for accuracy and latency.
- Dashboards are built around hierarchies defined with the customer i.e. block, street, estate—so users can filter information easily.
- Alert levels are fine-tuned with the customer to align with maintenance workflows.
- Role-based access is set up.
- Training sessions (on-site or remote) cover dashboard use, interpreting alerts, exporting reports, and integrating findings into existing maintenance tickets.

The goal is to ensure that customer staff can operate the system confidently from day one.

Phase 5: Go-Live and Optimisation (1-week initial stabilisation)

Once testing is complete, the system transitions to live monitoring.

- A short stabilisation window allows data validation and adjustment of alert thresholds.
- Weekly review meetings confirm progress and user feedback.
- After acceptance, the project moves into the operational support phase governed by the managed-service agreement.

Summary of Typical Implementation Timescales

Stage	Indicative Duration
Discovery & Design	2–4 weeks
Procurement & Configuration	2–3 weeks
Installation & Commissioning	4–8 weeks
Platform Setup & Training	1–2 weeks
Go-Live & Optimisation	1 week
Total Typical Mobilisation Period	**10–16 weeks**

For large portfolios, implementation can proceed in phased waves for example, 500 locations per month allowing benefits to be realised progressively while maintaining quality control.

4. Pre-Requisites for Successful Implementation

To deliver efficiently, several baseline inputs from the Customer are required:

- **Accurate property data** including addresses, block layout, and dwelling types.
- **Site access** and coordination with housing officers or caretakers to schedule installations.
- **Existing connectivity** either broadband or mobile signal—for gateway backhaul.
- **Nominated project led** to act as single point of contact for approvals and communications.
- **Agreed data-governance framework** covering data ownership, retention, and integration preferences.

These prerequisites are standard for IoT deployments and ensure both security and operational clarity.

Assumptions and Dependencies

- All installations are subject to a pre-survey confirming wireless coverage and safe working conditions.
- Site access will be managed jointly, with typical 48-hour notice before access.
- Total Care & Support Limited will provide hardware, configuration, documentation, and training as part of the contract scope.

Benefits of Our Approach

The mobilisation process is structured to provide immediate operational benefit even before full rollout is complete:

- **Early insight:** initial locations begin transmitting data within days of first installation.
- **Progressive validation:** real-world performance informs subsequent rollout stages.
- **Minimal disruption:** battery operation avoids electrical works or downtime.
- **Confidence in outcomes:** joint reviews verify data accuracy and tenant-safety improvements.

5.3 Operational Responsibility

Customers may choose between:

- **Self-managed operation**, where customer teams monitor dashboards and respond to alerts; or
- **Supplier-supported operation**, where Total Care & Support Ltd provides monitoring support, escalation, and reporting as agreed.

In addition, Total Care & Support Limited will provide the a customer with a nominated **Key Account Lead** for all engagements under this framework, who will act as the principal point of contact for both the CCS and Customers This role is responsible for overall account management, service performance, and stakeholder engagement, ensuring that Customers receive consistent, high-quality service throughout the life of the framework.

The Key Account Manager will be supported by a team of experienced specialists who will contribute to the delivery of services:

- **Technical Solutions Team** – network architects, systems engineers, and infrastructure specialists with expertise in fibre, wireless, managed services, and cloud technologies. They will ensure each solution is technically robust, secure, and scalable.
- **Service Delivery Managers** – responsible for day-to-day project management, ensuring clear lines of communication, milestone tracking, and reporting. They provide the assurance that projects are delivered on time and within agreed parameters.
- **Customer Support Desk –** a dedicated, UK-based support team providing responsive and proactive assistance. This includes incident management, service monitoring, and continual service improvement aligned with agreed SLAs.
- **Innovation & Compliance Specialists** – experts in emerging technologies, digital inclusion, data protection, and housing/health regulations (including Awaab's Law and Ofcom standards). Their role is to ensure solutions are not only compliant but also future-re

Customers will benefit from an experienced multi- disciplinary team of professionals with extensive knowledge of the public sector, proven digital transformation delivery expertise, and a strong record of customer engagement covering commercial, technical, operational, and compliance functions, ensuring a comprehensive and reliable service.

This structure provides both a single accountable lead for Customers and the depth of resources required to support the full range of services under the framework.

5.4 Ongoing Support

The service is delivered with tiered support levels designed to meet the operational needs of public sector customers. Support is provided by a UK based technical team and follows industry recognised structures.

First-line Support (Tier 1)
Provides initial triage and user assistance, including guidance on platform navigation, dashboard use, alert interpretation, and basic troubleshooting. Tier 1 handles common operational queries and determines whether escalation is required.

Second line Support (Tier 2)
Delivers deeper technical investigation for issues involving device behaviour, data flows, configuration, integrations, or performance. This tier works closely with engineering teams to diagnose faults, review sensor and gateway health, and validate network or platform level issues.

Third line Support (Tier 3)
Specialist engineering support for complex or escalated issues, including firmware anomalies, platform bugs, advanced analytics behaviour, and integration/interface defects. Tier 3 manages liaison with development teams where fixes or enhancements are required.

Service Coverage
Tier 1 Support is typically available 24 hours per day, 7 days per week, 365 days per year. Other support tiers are available Monday–Friday, 08:00–18:00 (excluding bank holidays), with options for enhanced hours if required. All incidents follow a defined SLA based response and escalation process, prioritised by severity and operational impact.

Additional Support Features

Our team will provide ongoing support in line with customer requirements, including:

- Remote device health monitoring and status checks
- Firmware and configuration updates (typically performed remotely and non-disruptively). Firmware updates will be provided at least once per year. Any security updates will be deployed immediately
- Device replacement or recalibration within warranty terms. Sensor warranty is 12 months from installation.
- UK Based technical support and user assistance available 8am-6pm Monday to Friday except bank holidays

- Training operational and maintenance staff (remote or on-site, standard or tailored as required)

5.5 Service Availability & Resilience

The service platform can be deployed either in a public cloud or private cloud environment hosted in UK data centres

The service platform is deployed using a distributed, load-balanced architecture, with application services and databases running across multiple independent nodes to eliminate single points of failure. Real-time health checks and automated failover continually monitor system performance and redirect traffic to healthy components if issues arise. Data is stored on replicated storage, with synchronous or asynchronous replication for integrity and regional resilience. The platform is architected to tolerate partial data loss or delayed ingestion from individual devices without affecting overall service availability or user access.

Operational resilience is further strengthened by continuous monitoring, automated remediation, and regularly tested backup and recovery procedures. Layered security controls, segmentation and protective monitoring reduce the risk of disruption from security incidents. Together, these measures ensure the service remains stable, highly available, and capable of withstanding infrastructure, hardware or facility-level failures without impacting customers.

The Sovereign Smart Sensor Management & Monitoring Service is designed so that the overall service remains available even if individual sensors, gateways, or local connectivity components are temporarily unavailable. The availability commitment applies to the core cloud service, including dashboards, analytics, alerts, APIs, and data access functions, rather than to individual edge devices or site-level connectivity. Where some sensors or gateways are unavailable, the platform continues to operate and present available data and insights.

The Supplier commits to a 99.95% monthly availability of the production cloud service ("Availability Target"), measured 24×7 using Supplier monitoring.

Unplanned Downtime refers to periods where users are unable to access core service functionality due to supplier-managed platform availability issues. Temporary loss of individual sensors, gateways or local connectivity does not in itself constitute service unavailability where the platform remains accessible and operational.

The standard availability commitment applies to the core cloud service as described. Enhanced availability options, including higher availability targets or additional resilience measures, can be provided by agreement at additional cost where required to support specific operational needs.

5.6 Offboarding Support

When a customer's contract comes to an end, we will provide a clear and secure process to ensure users can extract their data before access to the service is discontinued. We will work with the user to identify all customer data held by the service. We will provide users with a system interface to generate the exports and will validate completeness through checks like record counts.

Customers are informed of the available extraction window and are encouraged to initiate data retrieval promptly to avoid delays. Data can be exported using the platform's built in tools, which support standard, machine-readable formats such as CSV, JSON, XML. These tools are designed to allow users to retrieve all relevant records, configurations, and associated metadata in a structured and accessible format.

All data transfers are conducted over encrypted and authenticated channels to protect confidentiality and integrity during the download process. Users may perform the export independently or request assistance from the support team if additional guidance is needed. After extraction, customers are responsible ensuring data is stored securely in their own systems.

Once data retrieval is confirmed, the organisation will securely delete any remaining customer data in accordance with contractual, regulatory and compliance requirements.

Most of this activity is included within the standard contract price, covering documentation handover and basic data export, Extra charges typically arise for complex migrations, custom deliverables, knowledge transfer sessions, on-site work, accelerated timelines, or specialised security tasks, or extended post-termination assistance.

6 Service Framework, Security, and Quality Management

The solution is designed for long-term reliability and continuity of service. Security and data protection are integral to the system design.

Key features include:

- AES-128 encrypted data transmission
- Secure device authentication and access control
- GDPR-aligned data handling practices
- Remote monitoring and over-the-air updates to minimise disruption

The platform includes role-based access control (RBAC) to ensure users only access data and functions appropriate to their role. All significant user and system actions are logged to provide auditability and traceability in line with public-sector governance expectations.

User interfaces and dashboards are designed to conform to WCAG 2.2 accessibility standards, supporting inclusive access for users with differing needs across desktop and mobile devices.

Quality management is supported through:

- Defined installation and commissioning standards
- Controlled handling of customer and occupant data
- Support processes aligned with public-sector service delivery expectations

7 Future Development and Extensibility

The LoRaWAN® ecosystem enables ongoing expansion into additional monitoring and operational use cases, including:

- Waste management and bin-fill monitoring
- Asset and equipment tracking
- External environmental monitoring
- Infrastructure and internal environment sensors

New capabilities can be added as customer requirements evolve.

8 Summary

The Sovereign Smart Sensor Monitoring Solution from Total Care & Support Ltd provides a scalable, centrally managed approach to monitoring environmental risk, compliance, and operational performance across town, city, or estate-wide portfolios.

By deploying LoRaWAN® sensors and a cloud-based management platform, organisations can:

- Identify and mitigate risks early
- Improve operational efficiency and sustainability
- Support regulatory, policy, and wellbeing objectives

By aggregating data from distributed sensors into a single cloud-based platform, organisations gain consistent oversight at scale. The solution enables earlier identification of issues such as damp, mould, water ingress, or abnormal conditions. This supports compliance with statutory and regulatory requirements, including Awaab's Law, whilst reducing reliance on reactive or in-person inspection.

Centralised dashboards and prioritised alerts allow teams to manage compliance and maintenance activity efficiently across multiple locations, controlling costs and addressing issues before they escalate into more complex or expensive problems.