# CASE STUDY

**KJR independent testing identifying clear performance issues**

Project: State Government Dynamics 365 Performance Testing

### KEY OUTCOME 1

Scripting of myID Multi Factor Authentication

### KEY OUTCOME 2

Identification of key performance bottlenecks

### KEY OUTCOME 3

Clear path for resolving performance bottlenecks

## BACKGROUND

A State Government digital service platform that allows water entitlement holders, irrigation users, and certified inspectors to manage compliance obligations efficiently required improvement.

KJR was engaged to conduct performance testing on the water meter management system hosted in Azure, built using Azure Web Apps, APIs, and Dynamics 365. The system is used to record non-reticulated water usage, sourced from bores, rivers, or open channels, and is accessed by users via myID, a government-issued multi-factor authentication (MFA) solution.

Due to growing usage and performance concerns, the customer required support in validating and improving the responsiveness and throughput of the platform. KJR's role was to analyse the current usage to create a load profile, assess the system's performance under load and identify bottlenecks.

## CHALLENGE

One major challenge was establishing meaningful performance goals without historic usage data, which made defining realistic load parameters difficult.

Additionally, scripting the myID authentication flow, Australia's government identity solution, required careful bearer token management to accurately emulate user logins.

The test data setup added complexity: a single login was linked to numerous meters, causing the front end to make multiple backend calls per meter. This led to page non-responsiveness during scripting and the recorded scripts required extensive interpretation and modification to mimic production behaviour by only selectively retrieving data for a meaningful subset of meters.

## SOLUTION

KJR worked with the customer to design a performance testing approach that accurately reflected real-world usage patterns. The focus was on validating system behaviour under load through realistic user journeys including logging in via myID, retrieving meter data, and submitting readings. Key metrics including user-facing response times were compared to industry standard benchmarks to identify performance risks. These insights informed a set of practical, business-aligned performance goals. This approach ensured that test scenarios were both technically sound but also relevant to how end users interact with the system.

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## DELIVERABLES

To support the engagement, KJR delivered a suite of test artefacts and actionable insights. This included a performance test plan, detailed scenario documentation, and scripted user journeys built in JMeter. Tests were executed at scale using KJR's cloud-based infrastructure to enable a realistic load simulation. A performance test execution report outlined key system bottlenecks and included actionable recommendations. To maintain transparency and momentum throughout the process, KJR provided weekly status updates summarising progress, test outcomes, and any emerging risks.  This report ensured stakeholders remained informed through the engagement.

## KEY OUTCOMES

KJR's performance testing provided the customer with a clear, quantifiable understanding of how their system behaves under load. A key finding was that a Dynamics 365 plugin contributed to significant latency, exceeding the gateway timeout during meter submissions. Furthermore, the high number of backend requests per submission was shown to severely constrain system throughput, handling fewer than one meter submission per second before hitting Dynamics 365 rate limits. This bottleneck presents a critical risk given the projected user base growth.

The testing also validated that logging in via the myID MFA mechanism could be reliably scripted and simulated under load - an uncommon achievement given the complexities of external authentication flows. This allowed KJR to execute realistic end-to-end performance scenarios, closely mirroring real-world user behaviour.

## VALUE TO CLIENT

The customer now has a set of meaningful performance goals and a clear understanding of where development efforts should focus to scale effectively. KJR looks forward to supporting retesting once optimisations are implemented, reinforcing its value as a trusted performance partner.

## TOOLS & TECHNOLOGIES

JMeter, myID, Dynamics 365 and Azure Web Services