**Schedule 2 (Specification)**

This Schedule sets out what the Buyer wants.

For all Deliverables, the Supplier must help the Buyer comply with any specific applicable Standards of the Buyer.

**Overview**

*Crown Commercial Service (CCS) is seeking to replace its current Energy Trading and Risk Management (ETRM) system by sourcing a replacement, cloud-based system.*

*This is an off-the-shelf ready to deploy software procurement, rather than a software development project.*

*The ETRM will support CCS’s ability to provide its customers with risk-managed products for power and gas.*

1. **Basket (trade book) management**

*CCS hedges UK gas and power on behalf of a large number of client organisations.*

*The CCS portfolio is divided into ‘baskets’ (trade books), each of which is hedged independently.*

*Typically there is one basket per product, per commodity, per delivery year, though in some cases other durations may be used. This results in a large number of baskets.*

* 1. The ETRM must support multiple baskets.
  2. The ETRM must be able to accommodate:
     + 122 historic gas baskets
     + 190 historic power baskets
     + 39 current gas baskets
     + 49 current power baskets

(Approximately 400 existing baskets total)

* + - Approximately 100 likely additional future baskets
  1. The ETRM must support multiple statuses for baskets. As a minimum these must include:
     + Active (trading permitted)
     + Inactive (trading prohibited)
  2. The ETRM must allow authorised CCS end-users to create and edit baskets.
  3. The ETRM must support assigning baskets to different trade houses (for example: CCS portfolio, third-party portfolio, trainee portfolio)
  4. Ideally, the ETRM will support adding attributes and tags to baskets in a number of formats (text field, true/false, date, etc.) to facilitate streamlined management and administration by CCS users.

1. **Demand forecasts**

*When buying energy, CCS hedges volume against a forecast demand profile for each basket.*

* 1. The ETRM must support loading of demand forecasts for each basket.
  2. The ETRM must support loading multiple independent demand forecasts for each basket:
     + Power baskets have forecasts for baseload, peakload and residual demand.
     + Gas baskets have a normal forecast for forward buying, and a ‘weather-corrected’ short-range forecast used to adjust positions near delivery.
  3. The ETRM must support demand forecasts at:
     + Half hourly granularity for power baskets
     + Daily granularity for gas baskets

1. **Trade entry**

*CCS hedges the demand forecast for each basket by transacting standard UK power and gas products in the wholesale markets. All transactions are recorded in the ETRM.*

* 1. The ETRM must support the entry of all UK OTC and exchange traded UK Gas products.
     + Further details can be found in Appendix 1.
  2. The ETRM must support the editing of previously-entered trades.
  3. The ETRM must offer a streamlined and efficient interface for entering trades.
  4. The ETRM must support the recording of all UK OTC and exchange traded UK Power products
     + Power products include both Gregorian and EFA calendar trades.
     + Further details can be found in Appendix 1.
  5. The ETRM must allow trades to be assigned attributes that allow for easy inclusion/exclusion in CCS reporting. As a minimum, the following attributes are needed:
     + Gas actualisation trades
     + Optimisation trades
     + Void trades
  6. The ETRM must be capable of recording all the data fields listed in Appendix 2.
  7. The ETRM must support multiple trade statuses, as a minimum:
     + A status for a newly-entered trade that has not been reviewed;
     + A status for a trade that has been reviewed by the Trading team;
     + A status for a trade that has been reviewed by the Risk team.
  8. The ETRM must support sorting and searching of trades.
  9. The ETRM must be updated to reflect industry changes that impact the services specified without any additional cost.
  10. The ETRM provider must make available any functionality to manage power purchase agreements that are available in the system (without accessing third party service providers).

1. **Price curves**

*CCS loads forward gas and power price curves into the ETRM each day. These are used to value open positions.*

* 1. The ETRM must support loading of gas and power price curves.
  2. The ETRM must support loading of gas curves at daily granularity.
  3. The ETRM must support loading of power curves at half hourly granularity.
  4. The ETRM must support loading of prices specified to at least 5 decimal places.
  5. The ETRM must support loading of forward price curve data continuing indefinitely from the present and historic price curve from 1st April 2008 to present.

1. **Historic data archive**
   1. The ETRM must be able to store the entire archive of CCS trading data without loss of fidelity. This includes:
      * Historic trades
      * Historic baskets
      * Historic purchasing requirements / demand forecasts
      * Historic pricing data
   2. The ETRM must be capable of storing historic CCS data dated from 2008 to present. Some of these trades will use historic EFA calendars and products.
   3. A full list of the data points which must be captured can be found in Appendix 2.
2. **Position calculation**

*A key use of the ETRM is to facilitate position reporting. The key pieces of information are:*

* *Total volume required (the demand forecast loaded for each basket)*
* *Volume locked (calculated from trades entered)*
* *Volume open (total volume required – volume locked)*
* *Value of locked volume (calculated from prices of trades entered)*
* *Value of open volume (calculated from forward price curves)*

*A full list of the fields required can be found in Appendix 3*

* 1. The ETRM must be capable of calculating positions for each basket based on the relevant demand forecast, trades entered and forward price curve.
  2. The ETRM must be capable of displaying gas positions at the following granularities:
     + Daily
     + Weekly
     + Monthly
     + Seasonally
  3. The ETRM must be capable of displaying power positions at the following granularities:
     + Half-hourly
     + EFA blocks
     + Daily
     + Weekly
     + Monthly
     + Seasonally
  4. The ETRM must be capable of splitting power positions into baseload and peakload.
  5. The ETRM must automatically recalculate basket positions following relevant actions (e.g. trade entry or edit, price curve update.)

1. **Bulk data import and export**
   1. The ETRM must support bulk upload of all system data (e.g. trades, historic and forward price curves, demand forecasts/purchasing requirements) from templates in CSV or Excel format.
   2. The ETRM must support bulk extraction of all system data to CSV or Excel format.
   3. The ETRM must support extraction of all system data (including raw, non-aggregated data) via an API interface.
   4. The ETRM must support loading all system data via an API interface.
   5. The ETRM API interface must be compatible with the Microsoft products used by CCS (Excel, PowerBI, Azure), without the installation of any additional software or plugins.
   6. The ETRM API interface must be flexible, allowing CCS to create new queries or modify existing queries in response to changing business and reporting needs.
   7. The ETRM API interface must be sufficiently performant to be usable for everyday reporting and analysis. A position report for all gas or all power baskets should take no longer than 1 minute from request to completion.
   8. Any API interface used must comply with modern technical standards, e.g. REST.
2. **Data validation**
   1. The ETRM must perform comprehensive validation checks to ensure that all data imports (whether via the web interface, file upload, API, etc.) are valid and exhibit good data hygiene in line with best practice.
   2. The ETRM must not permit the loading of any data which fails validation or which may otherwise damage the integrity of the database.
   3. The ETRM must provide a descriptive error message for any failed data load operations, and record the failed attempt in the task list and audit log.
3. **System status**
   1. The ETRM must allow users to view tasks in progress and queued, including system tasks and those instigated by other users (for example, if a user enters data which requires the system to recalculate positions, it must be clear to **all** users that there is a recalculation in progress and the position data has not yet been updated).
   2. The task list must provide detailed feedback on the failure of any tasks to enable debugging.
4. **Audit log**
   1. The ETRM must include a comprehensive audit log.
   2. The audit log must record all actions that result in a change to the data stored in the system, whether instigated by a user or automatically by the system.
   3. The audit log must capture the user, action, date and times of all changes to the system data.
5. **User accounts**
   1. The ETRM must support secure sign-on with one account per user.
   2. The ETRM must allow CCS to create new users without restrictions.
   3. The ETRM must include at least 20 live user accounts (accounts in active use by CCS staff, not including any administrative accounts required by the supplier).
   4. The ETRM must keep records of activity by inactive accounts for audit purposes (i.e. when a user’s account is deleted or deactivated, any trades they’ve entered or actions they’ve performed must still record their username).
   5. The ETRM must allow for role-based access control (RBAC). For example, a user may not be permitted to trade certain commodities or access certain areas of the system.
   6. CCS must be able to designate certain user accounts as administrators who can set and amend permissions for other users.
   7. See Appendix 4 for example user roles and associated permissions.
6. **Test and development environment**
   1. The ETRM supplier should make available a test and development (T&D) environment upon request should it be required.
7. **System deployment and configuration**
   1. The supplier must complete all activities needed to deploy the ETRM and make it ready for live business use by 11th April 2025. There will then be a period of dual-running alongside the existing system until that contract expires on 18th May 2025. This will include:
      * Installation and setup of the system.
      * Configuration of the system to support the requirements described in this document.
      * Migration of all live and historic data from the previous ETRM system.
8. **Historic data migration**
   1. The supplier must migrate historic data from the outgoing ETRM to the new system.
   2. Data to be migrated will include:
      * All CCS baskets dating back to 2008 (approximately 312)
      * Demand forecasts / purchasing requirements for each basket (usually 2 per basket: baseload/peakload for power, long term/weather corrected demand for gas)
      * All CCS trades dating back to 2008 (approximately 30,000 which include legacy EFA power trades)
      * 2 price curves (one daily gas curve, one half-hourly power curve, with data from 2008-present)
      * Any other historic data as required by CCS.
9. **Training and documentation**
   1. The supplier must provide training on the ETRM solution for all relevant CCS staff (approximately 15-20 staff total).
   2. The supplier must provide comprehensive documentation for the ETRM solution.
10. **Service Support**
    1. The supplier must provide access to a support helpdesk (including technical support) for CCS users within working hours:
       * CCS working hours are 09:00-17:00 GMT (Monday to Friday)
       * Queries must be responded to within 2 hours
    2. The supplier must provide and keep up-to-date a customer support and escalation plan, including:
       * Methodology for categorising issues by severity.
       * Standard processes for issue resolution in each tier.
       * Timescales for resolution of issues in each tier.
       * Names and contact details of individuals at appropriate levels of seniority, through whom issues can be escalated as appropriate.
       * (All of the above to be agreed with CCS during deployment).
11. **Non-functional / technical / security requirements**
    1. The ETRM must adopt guidance on security SaaS tools in order to avoid data breaches
       * Ensure compliance with the 14 security principles listed here:

[NCSC’s Cloud Security Principles](https://www.ncsc.gov.uk/guidance/implementing-cloud-security-principles)

* + - The following guidance should be referred to:

<https://www.gov.uk/guidance/securing-saas-tools-for-your-organisation>

* 1. Managing disaster recovery
     + A Business Continuity and Disaster Recovery (BCDR) Plan must be prepared ahead of the go-live date, in accordance with the timelines and principles outlined in Schedule 14.
  2. Migration
     + It should be easy to migrate away from the ETRM tool. If CCS chooses to move to another provider, data will need to be exported via REST APIs in bulk. See Section 7 for data extraction requirements. Data should be deleted securely from any ETRM tool no longer in use.
  3. Import
     + The tool should allow for the initial set up of risk trading energy data. Section 13 stipulates that the chosen supplier will be responsible for this activity.
  4. Configuration
     + Modification is the last resort for a SaaS tool - selected tool should match requirements so that no code changes are required to the underlying system code.
     + If minor changes are required, this should be achieved through table driven workflow/business rules changes, data dictionary/model based  
       changes, callouts through standard published callout events or changes through a common integrated (but decoupled) business rules and process engine.
  5. Data - GDPR/DPIA
     + The expectation is that the provider of the ETRM service will hold or operate data in UK data centres. CCS approval will be needed to endorse any solution that stores sensitive data in the European Economic Area (EEA) or beyond.
     + Personal data must be stored in such a way that complies with the Data Protect Act (including GDPR guidelines). A DPIA assessment MUST be carried out once a tool is selected/procured.

[Data Protection Act](http://www.legislation.gov.uk/ukpga/2018/12/contents/enacted) (including [GDPR guidelines](https://www.gov.uk/government/publications/guide-to-the-general-data-protection-regulation))

[Public Records Act](http://www.nationalarchives.gov.uk/information-management/legislation/public-records-act/)

[Freedom of Information (FOI) Act](https://ico.org.uk/for-organisations/guide-to-freedom-of-information/what-is-the-foi-act/)

* 1. Data retention
     + The periods are listed here for various data types:

<https://www.gov.uk/government/publications/crown-commercial-service-privacy-notice/crown-commercial-service-privacy-notice>

* + - Consideration should be given as to how data will be stored in the vendor's solution - hot/cold storage. Also, when interpreting the data retention guidelines, what the timeframe should be based on e.g. entered date, last updated or removed date etc. Audit logs are detailed in Section 10.
  1. Browser support
     + A web based SaaS deployment that is compatible with the following browsers:

Chrome

Safari

Edge

* 1. Social value and sustainability
     + The provider should be able to link to their published sustainability policy. CCS wishes to procure from suppliers who have committed to and are publishing science based targets for carbon footprint, waste reduction etc.
     + See CCS policy (draft status)

<https://crowncommercialservice.atlassian.net/wiki/spaces/AG/pages/3941924865/Sustainable+Information+and+Communications+Technology+ICT>

1. **Security Requirements**

*This section outlines the summary of security requirements for government contracting, specifying obligations for suppliers to protect government data and systems, and development activities.   
Note: These will be elaborated in the official Security Schedule in detail.*

* 1. Risk Assessment and Compliance:
     + Contracts are categorised by risk (higher or standard), which determines the level of compliance. Suppliers must follow security guidelines based on this classification. Higher-risk contracts require more rigorous adherence to security protocols.
  2. Security Certifications and Standards:
     + Suppliers and sub-contractors must comply with certifications like Cyber Essentials, and ISO/IEC 27001 for higher-risk contracts. Ensure compliance with the 14 security principles listed here [NCSC’s Cloud Security Principles](https://www.ncsc.gov.uk/guidance/implementing-cloud-security-principles).
  3. Data Location and Handling:
     + Suppliers and subcontractors can only store, access, or process data in CCS-approved locations, ensuring compliance with UK data protection laws. Specific certifications depend on risk classification and data handling roles.
  4. Encryption Standards:
     + All government data must be encrypted both at rest and in transit, using approved methods for each case.
  5. Access Control:
     + For higher-risk contracts, suppliers must implement multi-factor authentication for sensitive data access, with strict access restrictions for privileged users. Privileged accounts are limited to specific devices, have high-complexity, unique passwords, and time-limited sessions. All access must be logged, with privileged user activities retained for 20 working days and available for buyer review.
  6. Secure Development Practices:
     + Suppliers are required to follow secure development guidelines, including malware prevention, securing development environments, and conducting regular code reviews. Development environments should be logically separate, with restricted access and secure credential management.
  7. Monitoring and Incident Response:
     + Suppliers must establish protective monitoring to track access and detect potential breaches. If a security incident occurs, suppliers are expected to implement a breach action plan and coordinate with the buyer on remediation actions.
  8. Vulnerability Management:
     + Suppliers are responsible for timely patching of vulnerabilities (critical within 7 days, high within 30 days, others within 60 days). A Remediation Action Plan is needed for identified vulnerabilities, with specific steps to mitigate or patch them. If more than 10 high-risk vulnerabilities are found, an independent security advisor shall be appointed for a root cause analysis.
  9. Backup and Recovery:
     + A structured backup and recovery plan is essential, ensuring minimal data loss and rapid recovery time in the event of a system failure. The backup system must maintain physical and logical separation from operational systems to avoid simultaneous data loss.
  10. End-User Devices:
      + Any devices used for accessing government data must have vendor-supported operating systems, be encrypted, require user authentication, and allow remote wipe in case of loss.
  11. Third-Party Tools:
      + Due diligence is required for third-party tools, which must be listed in a register, with regular checks for vulnerabilities. All third-party tools need to meet equivalent security standards to ensure compliance.
  12. Security Management Plan:
      + For higher-risk agreements, suppliers must document a Security Management Plan within 20 days, detailing compliance with Schedule 16 and protocols for data protection. The plan is reviewed by the buyer and updated annually or when system changes occur.
  13. Breach of Security:
      + If a breach occurs, suppliers must notify the buyer within 24 hours and submit a Breach Action Plan within five days, detailing containment and remediation steps. Suppliers bear the costs of response, including communication with affected individuals and regulatory reporting if needed.
  14. Physical Security and Vetting:
      + Secure physical locations for data handling are required, with site-specific security plans. Staff must undergo vetting, receive annual security training, and access only the data necessary for their role.
  15. Code Review and Secure Deployment:
      + Regular code reviews are required for higher-risk agreements, assessing for security vulnerabilities. Automated security testing is part of deployment, and only secure third-party code modules are used.
  16. Protective Monitoring and Logging:
      + Suppliers are required to log all activities in the system, especially those of privileged users, with a monitoring system to detect anomalies. Event logs are maintained and reviewed as part of ongoing security assurance.

**Appendix 1: Trade types**

The ETRM must be able to record all UK OTC and exchange traded gas and power products.

The gas products commonly traded by CCS include (but are not limited to):

● UK Gas Seasons

● UK Gas Quarters

● UK Gas Months

● UK Gas Weeks

● UK Gas Weekends

● UK Gas Days

● UK Gas Balance of Month

● UK Gas Balance of Week

● UK Gas Shape Trade

The power products commonly traded by CCS include (but are not limited to):

● UK Power Base Seasons

● UK Power Base Quarters

● UK Power Base Months

● UK Power Base Weeks

● UK Power Base Weekends

● UK Power Base Days

● UK Power Peak Seasons

● UK Power Peak Quarters

● UK Power Peak Months

● UK Power Peak Weeks

● UK Power Peak Weekends

● UK Power Peak Days

● UK Half Hourly shape

● UK Hourly shape

The archive of historic CCS data includes EFA power trades.

**Appendix 2: Trade data fields**

| **Field** | **Description** |
| --- | --- |
| Trade ID number | Unique identifier for the trade |
| Basket | ‘Basket’ is CCS terminology for a trade book |
| Counterparty | The supplier that will deliver the gas/power |
| Counterparty reference | Free text field to capture the ID number used by the counterparty to refer to each trade |
| Commodity | UK gas or power |
| Product | The relevant UK gas or power contract (see appendix 1) |
| Buy or Sell | Whether the trade is a buy or a sell trade |
| Start date | Start of delivery window |
| End date | End of delivery window |
| Volume | Volume per period (half-hour for power, day for gas)  In MW for power, therms for gas |
| Total volume | Total volume delivered for the entire period.  In MWh for power, therms for gas. |
| Price | Trade price per unit, in £/MWh for power and p/therm for gas.  Must be able to record at least 3 decimal places for gas, and 2 decimal places for power. |
| Total value | Total £ value of the trade. |
| Trader | The trader responsible for the trade. |
| Executed date | Date the trade was placed with the counterparty. |
| Memo | Free text field to capture any notes about the trade. |
| Confirmation status | To record the trade’s progression through the CCS verification process - see Section 3.6 |
| Gas actualisation trade | True/false flag to designate gas actualisation trades |
| Optimisation trade | True/false flag to designate optimisation trades |
| Void | True/false flag to designate voided trades |

**Appendix 3: Position calculation fields**

● The following tables show the data points captured in CCS position reports.

● Position reports are per-basket, per-month.

● Power baskets require two separate positions for each month: one for baseload, one for peakload. An identification field is included to distinguish the two.

| **Gas Baskets** | |
| --- | --- |
| **Field** | **Description** |
| Basket | Basket that the position report applies to |
| Month | Calendar month the position report applies to |
| Therms required | Month volume requirement (from the demand forecast) |
| Therms done | Month volume bought (derived from trades entered) |
| Therms outstanding | Month volume remaining (therms required - therms done) |
| Cost done | Total cost of volume purchased (derived from trades) |
| Cost outstanding | Total cost of volume outstanding (derived from therms outstanding and forward curve prices) |
| Average unit price done | Average unit price (p/therm) of purchased volume (value done / therms done) |
| Average unit price outstanding | Average unit price (p/therm) of outstanding volume (value outstanding / therms outstanding) |
| Average weighted price | Average unit price (p/therm) of the open and closed position (cost done + cost outstanding / therms required) |

| **Power Baskets** | |
| --- | --- |
| **Field** | **Description** |
| Basket | Basket that the position report applies to |
| Month | Calendar month the position report applies to |
| Base/peak | Specify whether this position is for baseload or peakload |
| MWh required | Month volume requirement (from the demand forecast) |
| MWh done | Month volume bought (derived from trades entered) |
| MWh outstanding | Month volume remaining (volume required - volume done) |
| Cost done | Total cost of volume purchased (derived from trades) |
| Cost outstanding | Total cost of volume outstanding (derived from MWh outstanding and forward curve prices) |
| Average unit price done | Average unit price (£/MWh) of purchased volume (value done / MWh done) |
| Average unit price outstanding | Average unit price (£/MWh) of outstanding volume (value outstanding / MWh outstanding) |
| Average weighted price | Average unit price (£/MWh) of open and closed position (cost done + cost outstanding / MWh required) |

**Appendix 4: Example user roles**

| **Action** | **Traders** | **Risk** | **Admin** |
| --- | --- | --- | --- |
| Enter Trades | Yes | Yes | Yes |
| Edit unlocked trades | Yes | Yes | Yes |
| Lock Trades | No | Yes | Yes |
| Unlock trades | No | Yes | Yes |
| Edit locked trades | No | No | No |
| Setup and edit counterparties | No | No | Yes |
| Setup and edit Books | No | Yes | Yes |
| Activate/ Deactivate Books | No | Yes | Yes |
| Setup price curves | No | No | Yes |
| Load curves | No | Yes | Yes |
| View Positions | Yes | Yes | Yes |
| Load Demands | No | Yes | Yes |
| Manage Access Rights | No | No | Yes |
| Manage System Parameters | No | No | Yes |
| Create and Edit Risk Reports | No | Yes | Yes |