

5-7 Alexandra Road
Hemel Hempstead
Herts HP2 5BS. UK

Tel: 44 (0)1442 242200
Fax: 44 (0)1442 214077
business@bpa.co.uk
www.bpa.co.uk



Buncefield Terminal Redevelopment

Prior to the 2005 explosion.

11th December 2005 – the biggest fire in peacetime England.

Client: West London Pipeline and Storage Ltd.
Asset: Buncefield (West London Terminal)
Role: Project Management of the design, procurement, construction, commissioning
Contractor: AMEC Foster Wheeler
Date: 2012 – 2017
Value: ca £100million
Resources: 150000 Management Manhours
- 1.5M Contractor Hours

Description

The objective of the project is to rebuild the bulk oil terminal which was destroyed in the Buncefield incident in December 2005. It involves the design and construction of 8 tanks (5 bulk storage, 3 interface) totalling some 65,000m³ of fuel storage and all associated pumping, terminal and control facilities to handle and distribute aviation and ground fuels (diesel and petrol) received via associated multiproduct pipeline systems.

Following the incident, a number of damaged tanks were demolished; significant ground contamination issues were addressed, and the site cleared and remediated before rebuild commenced.

The terminal's functions are:

- to receive product from the UKOP/West London/Walton Gatwick multiproduct systems and divert the flow either to the new terminal managed by BPA, or to the appropriate local tank farms operated by other oil companies
- to enable the buffering and batching (product quality control recertification) of aviation fuel received from the multi-product pipeline systems
- the supply depot for aviation fuel transfer via pipeline to Heathrow and Gatwick Airports
- to provide new road loading facilities to allow export of aviation fuel by road tanker.

Scope of Works

BPA undertook a FEED to develop the specification and establish a robust cost estimate for the rebuild and commissioning of the terminal. The design incorporated the Storage Tanks, Piping Systems, Civil Structures, Fire Systems, Electrical Infrastructure, Control and Instrumentation Systems and Cathodic Protection Systems.

The designs took into consideration the recommendations of the Major Accident Investigation and all subsequent HSE recommendations, guidance and changes to regulation in the development, and management of bulk fuel storage facilities.

BPA managed an extensive planning application process to gain local authority permission (involving two authorities as the site spans local borders). BPA were involved in more than 30 briefings with the local MP, local councillors and regulatory authorities.

With planning permission granted, BPA then managed the appointment of Amec Foster Wheeler as Main Works Contractor in March 2013, with construction and commissioning due for completion late 2017.

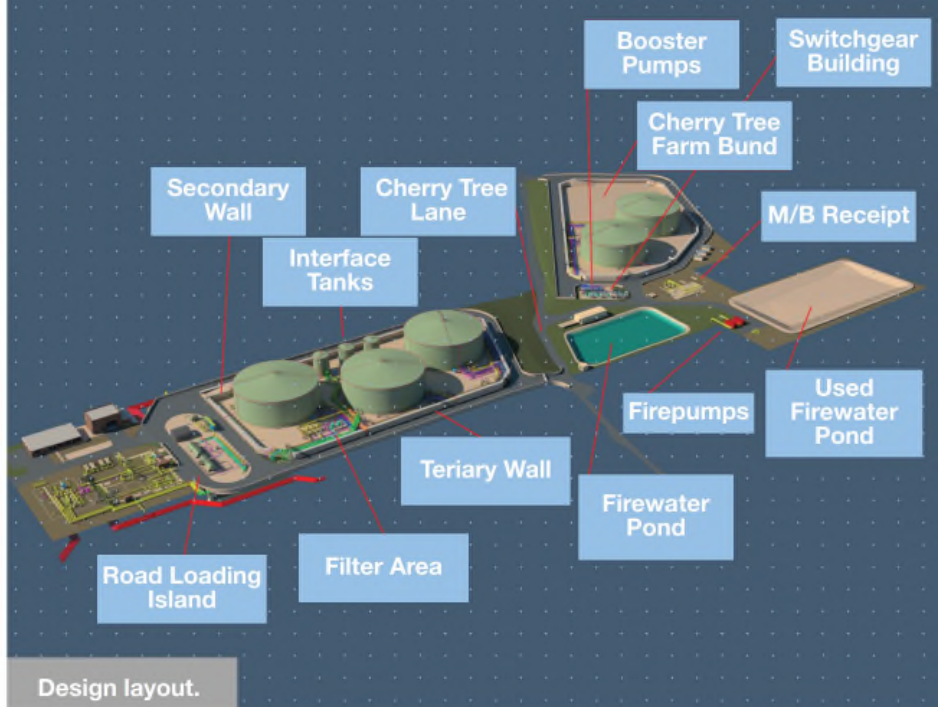
The BPA Project Management Team also undertook procurement of all major / long lead mechanical, electrical and control equipment for free issue to the appointed main works contractor.

The deliverables:

- 5 primary above ground storage tanks for the handling of JET A1 aviation kerosene. The combined usable capacity of the primary tank is 64,250m³.
- 3 interface tanks with a combined usable capacity of 1,260m³. Two site slop tanks (55m³ each) will be retained in situ.
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- All of the tanks are located inside impermeable bunds (secondary and tertiary containment) designed to contain any fuel in the event of an accidental release. The bunds will comprise a rein-forced concrete floor surrounded by reinforced concrete walls (and integrated stainless leak stops at joints).



Site remediation from 2005-2013.



Design layout.

- Tertiary containment facilities comprise paved and surfaced areas draining into a common drainage system that in turn flows into either a treatment plant or a tertiary storage lagoon (constructed specifically for the management of water in emergency situations).
- Booster pumps will deliver stored fuel from the tanks to the mainline high pressure pumps currently operational on the main site. In addition, a series of filtration vessels ensure high standards of fuel quality are sustained. Recirculation pumps allow the movement of fuels within the site boundary. All of these facilities are located in banded areas connected to a common drainage system.
- To allow for the safe loading of aviation fuel and product interface (and 'slop') material, the project includes the relocation of an existing road loading gantry. Improved access roads both for the movement of tankers and to provide improved levels of access for emergency and maintenance vehicles have also been constructed.
- Fire water lagoon provides 4.5 million litres of emergency firefighting water.
- A site security system including perimeter fence, CCTV, site lighting, access control, etc.

Throughout the rebuild of the terminal the existing operation was maintained allowing continued fuel delivery through the site. This involved a number of temporary works such as a temporary firemain, service culverts and numerous pipeline diversions.

The Challenges:

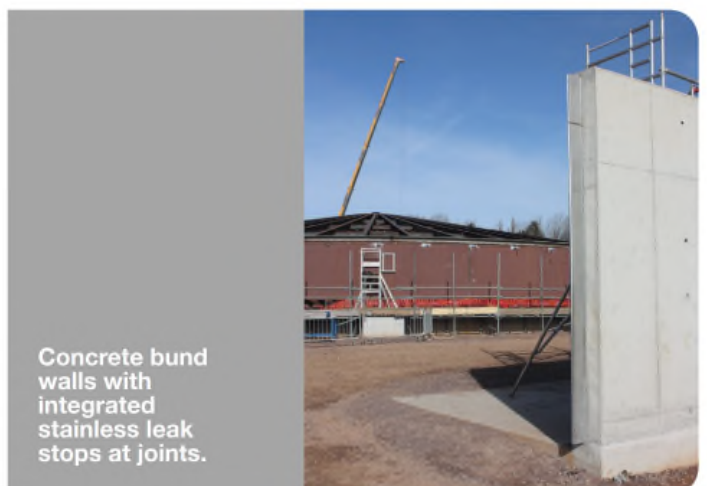
- Multiple client representatives (4 oil companies)
- Multiple work fronts to control across 2 sites
- Operating a live facility in the midst of construction site
- Extensive live buried services
- Extensive "brownfield"/site contamination issues
- Public road dividing construction site



Roof construction on main storage tank (12,500m³).



Progress of construction – early 2017.



Concrete bund walls with integrated stainless leak stops at joints.