

## WAREHOUSE DESIGN & BUILD – BROWN FIELD AUTOMATED NDC

### CLIENT'S SPECIFICATION

Following a major acquisition and strong growth, a specialist retailer with 150 out-of-town stores invited HWP to project manage, design and build an automated National Distribution Centre (NDC), replacing existing supply chain networks.

With ambitious growth plans, and two discrete distribution centres - a legacy of the acquisition - the existing operation was close to capacity, preventing efficient operation of the supply chain. The new NDC required sufficient capacity to manage the forecasted growth for the foreseeable future.

HWP examined the feasibility of combining the two existing distribution centres into one, new, purpose-designed facility. In addition, HWP made recommendations regarding the size, location, design, systems and modus operandi of the new facility.

### SUPPLY CHAIN

Post-acquisition integration of the new business had progressed well, with the supply chain being one of the last areas to be addressed. Duplication occurred within the supply chain, with both depots concerned with the receipt, storage and picking of goods from the same supplier base.

The basis of assigning stores to despatch depots was historical (i.e. pre-acquisition). However, as stores were re-branded, they were being transferred to the closest depot, capacity allowing.

Both operations were controlled, to a greater or lesser extent, by a traditional paper based WMS, which enabled basic warehouse tasks of receipt, storage, picking and despatch to be accomplished.

Store orders were created by the incumbent retail system and subsequently transferred to the WMS to handle the up-stream supply chain activities.

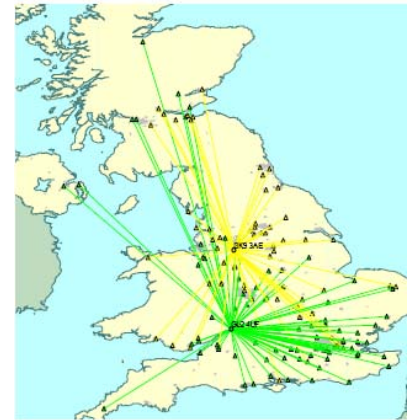
### PROPOSED SOLUTION

HWP proposed a single NDC to enable:

- Minimal stock levels to be held.
- Minimal warehouse overhead.
- Same-day delivery to stores.
- Purchasing benefits to be realised.
- Lowest supply chain costs to be realised.

Volume geographic analysis identified the 'centre of gravity'. HWP conducted searches for suitable sites, acting as agents on behalf of the client, identifying a number of potential schemes within the area. The site selected, although not optimal in terms of transport costs, was well served by motorway and trunk road links. Furthermore, the modelled £100k increase in transport costs could be more than offset by reduced land and property costs.

Basic design philosophy focused on smoothing flows of goods through the warehouse to optimise the use of space, manpower and machinery with the elimination of wasteful



activities. The client's product range exhibited a slightly depressed Pareto curve with 80% of sales coming from 25% of SKUs.

Containing a mix of wide aisle racking, live carton storage and shelving, the design allowed for all items to be picked from floor level, avoiding the need for expensive and cumbersome high level picking equipment, maximising picking rates and minimising costs.

In addition, the complex product base required the picking of orders in a 'store-friendly sequence' to facilitate simple and efficient shelf replenishment at the stores.

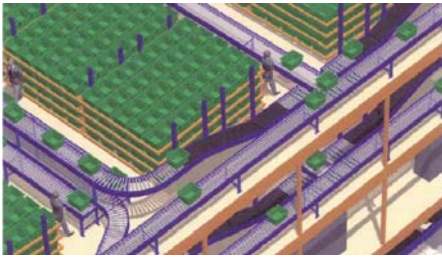
The warehouse design facilitated 2,000 SKU pallet pick faces with a further 8,000 reserve pallet locations. A 3-tier mezzanine serviced by a conveyor system gave provision for the remaining 3,000 SKUs, stored in a mixture of live carton storage shelf locations. The storage parameters for any particular SKU were set by; physical characteristics, stock holding and throughput.

Computer modelling demonstrated that a marshalling area of 35,000 sq.ft. was necessary to enable goods to flow in and out of the warehouse effectively, with a provision of 26 doors, 24 of which

were dock-leveler type, the remainder being 6m high, level access doors.

The number of vehicle movements at peak dictated vehicles move on and off the docks via a clockwise circulatory roadway to prevent congestion.

Warehouse movements necessitated a mixture of Mechanical Handling Equipment (MHE) comprising; reach trucks, counterbalance and POPTs.



## IT AND AUTOMATION FACILITATION

After reviewing the existing IT provision, HWP concluded that the incumbent Warehouse Management System (WMS) did not have the required functionality to enable the new distribution centre to operate efficiently.

Whilst developing the warehouse methodology, HWP facilitated and developed a detailed User Requirements Specification (URS), enabling detailed tenders to be received comparing providers on an equal basis. In essence, the basic premise for the WMS was that:

- The warehouse environment is paperless.
- Efficient receipt, storage and picking must be facilitated.
- A continuous, real-time interface must be maintained with the core business system.
- A management information reporting suite must be provided.
- The WMS must interface with all automation within the facility.

A detailed automation design was also developed by HWP along with

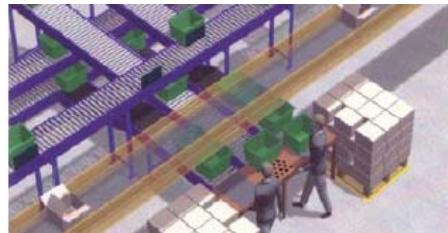
the requirements for the Conveyor Control System (CCS).

Using the URS, HWP conducted a full ITT process, using industry knowledge, research and conducting pre-tender interviews, to invite the best-in-class providers to tender for the provision of the WMS and automation solution.

Also included in the tender was specific information on the requirements for the CCS, links to the retail order system and specification of the automation design and scope.

## BUSINESS CASE

The solution's business case forecasted annual savings of £1.55m in the first year of operation, in comparison to the budgeted costs of the existing supply chain. As the existing business grows to forecast, annual savings will rise accordingly to £2.2m, £2.5m and £2.8m for each consecutive year.



The savings were derived from the reorganization of the existing supply chain including:

- Reduction in warehouse area to 140,000 sq.ft., from 195,000 sq.ft. across the two existing sites.
- Distribution headcount reduced from 211 to 107.
- Efficiency savings from improved IT facilities and operational working practices.
- Reduced stock holdings.

Capital expenditure of £4.3m was required to fund the project, with exceptional revenue costs totalling £2.5m.

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