Using performance management and modelling techniques to measure the capacity of a DC network

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March 2008

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Optimizing Business Performance

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1. INTRODUCTION

Most logisticians, if they think about labour management will think of it as a tactical tool to improve performance and reduce labour costs.

Labour management is a collection of techniques to improve performance through:-

- Manpower planning,
- Performance measurement and control
- Business process engineering
- Motivation

In this case study I will demonstrate how we used the techniques of labour management to influence the long term network development strategy of a major retailer, substantially reducing long term capital and revenue costs.

We will go on to argue that, while there is clear value in a one-off strategic assessment such as this, adoption of labour management principals will keep resources and demand permanently in balance and will lead to continuous improvement in supply chain performance.

2. BACKGROUND

This case study concerns a major UK retailer, who has experienced considerable sales growth over the last ten years and expects this to continue. Their network of six RDC's is operated in house and through 3rd parties.

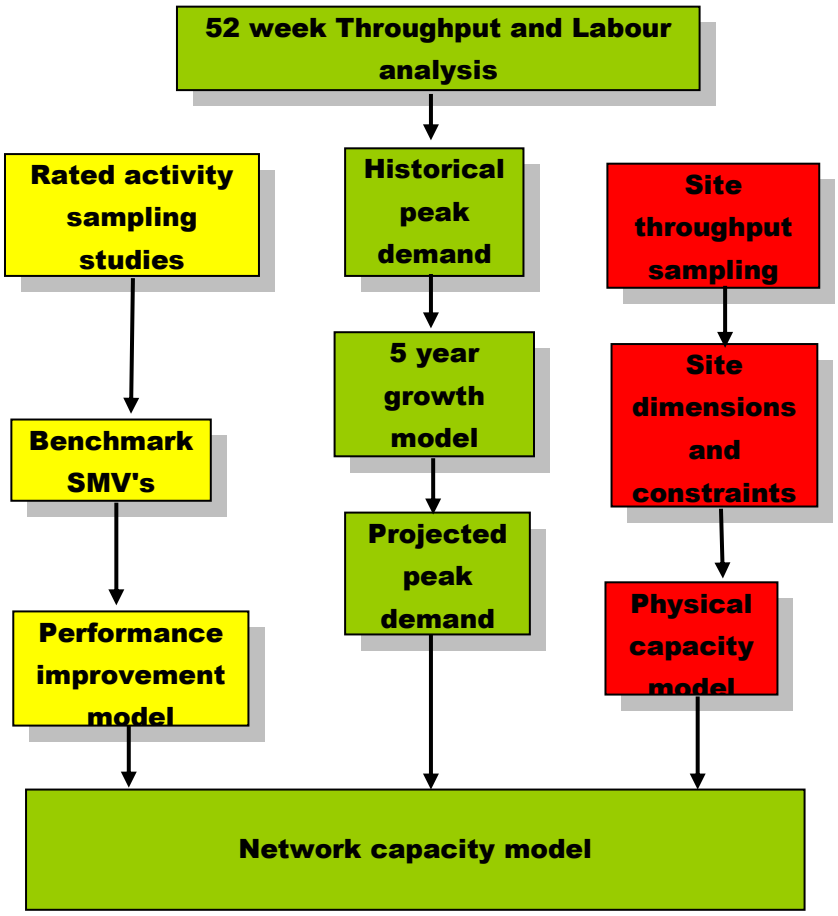
The company has had a long-standing strategy of meeting sales growth by adding to the RDC network. Last year, many in the operations team considered they had reached their capacity limit with a six RDC network and that a seventh RDC should now be added. Not everyone in the business was convinced by this but found they did not have the means to accurately and objectively measure capacity.

Our brief was to provide the measurement and to model network capacity so that the true throughput capabilities of the RDC's could be determined along with the factors that could stop the network achieving its full capacity.

3. OUR APPROACH

Our view is that the overall effectiveness of an operation is a major determinant of capacity. If work is produced more consistently and at a higher level of performance then the output capacity of an operation as a whole will be increased.

We set out therefore to measure the gap between current performance and an achievable target performance, taking into account the limits set by physical constraints.



We did this by using a combination of three information gathering and modelling paths.

3.1 The reference data path

We took a full year's week by week data on throughput and hours of work, establishing historical peaks of demand. We then converted the five year sales plan into physical volume, (taking account of changes in mix) and applied the historical demand pattern to sales plan

volumes to arrive at a new peak demand expressed in physical terms for the five year horizon.

3.2 The performance measurement path

We directly observed the RDC operations to:-

- Measure the flow of work hour by hour throughout a working week
- Generate a suite of standard times to calculate current and potential performance
- Review working practices and measure the scope and value of improvement

We used this data to build a model of the future where improved performance generates greater capacity. We were able to make specific recommendations on the changes that need to occur and the value in capacity terms of making the changes.

3.3 The physical capacity measurement path

We directly observed material flow in the dock operations and assessed the impact of congestion throughout the RDC's. We then benchmarked key factors such as space turnover and truck density to derive physical limits expressed in unit throughput terms.

4. ADDING CAPACITY BY IMPROVING PERFORMANCE

Our argument is that by using direct observation and accurate work measurement we can understand and then model the detail of an operation over a shift, a week and a full year. We can create standard data to make objective comparisons between RDC's and use this to benchmark each part of the RDC operation. We can then accurately measure the performance gap in each RDC and compare the capacity available against the capacity required to meet growth in demand.

We used the work measurement technique, rated activity sampling, to establish work patterns and performance in the RDC's.

4.1 The rated activity sampling study

Rated activity sampling (RAS) is a work measurement technique designed to give an overall assessment of work content and performance for a group of employees usually over a full shift.

The technique relies on statistical probability in that observations are made at intervals, in this case of ten minutes, and the activity observed at the moment of the observation is recorded. The operator's performance is also recorded so that the results can be adjusted to a standard performance. The total of all recordings for an activity is expressed as a proportion of the total observations and, with the ratings applied, we can use this to calculate the work content of the activity. It is subject to statistical error and the accuracy of the final results depends on the number of observations taken. We expected these studies to be accurate to within ±5% for major activities.

We chose RAS for a number of reasons:-

- It allows us to cover a large group in a short time
- By covering a full shift we observe the full working day including start and finish activities
- By studying a whole group, we observe the interaction and contention between different jobs

- The application of a rating means we can calculate work content and from that, a standard time for each job

- We get a broad overview of the job at the same time as we measure the detail

We analysed the RAS studies to give a measure of potential improvement under the following three headings:-

- Process improvements, where we saw clear opportunities to reduce work content by changing a process or eliminating waste

- Improved management, where we saw clear opportunities to improve employee planning, employee deployment and basic control of the operation

- Individual performance improvement, where we calculated potential improvement based on a target performance

We found great opportunities for improvement through better labour planning and in improved management of employees on the shop floor.

We saw significant opportunities to improve processes by some simple changes and by some low cost investments.

4.2 The performance model

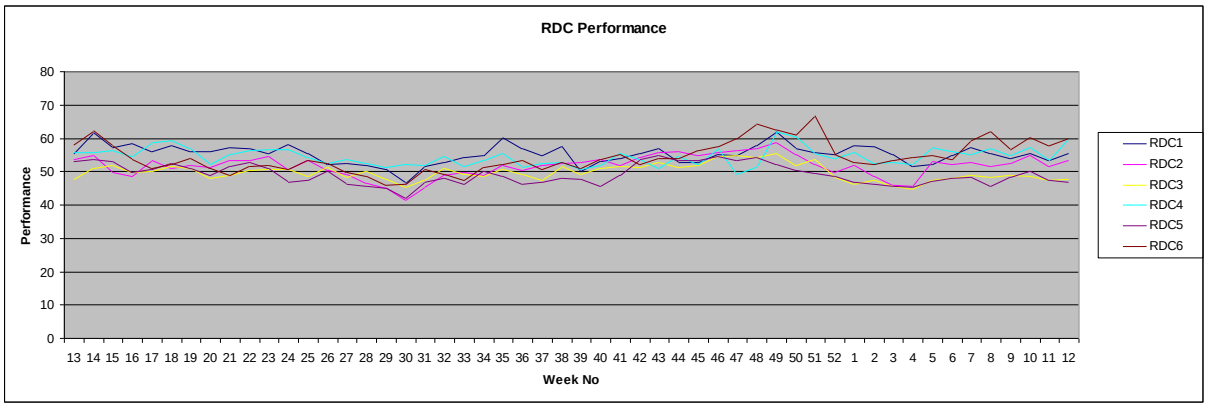
The opportunity that performance improvement presents is for additional capacity from working more effectively and more consistently throughout the working hours with no increase in resources.

4.2.1 Benchmark standard minute values

We used the RAS studywork to develop a set of benchmark standard minute values (SMV's) for the major operational tasks. In developing these, we stripped out avoidable waiting time and included the effect of obvious process improvements. We then calculated a single benchmark standard for application in all RDC's. In this way, straightforward comparisons

could be made between RDC's and broad conclusions on capacity could be reached on network capacity.

The results over a 52 week reference period were remarkably consistent between RDC's.



4.3 Improving performance

So what performance level can reasonably be expected?

Benchmarking against organisations that manage performance without using direct financial incentives, a performance of 75 is a reasonable expectation. For machine controlled work such as truck driving, we would expect a higher 85 performance.

Taking an overall performance expectation of 77 (75 for goods in, picking and despatch, 85 for truck movement), the reference period showed a gap of 24 points between the current 53 performance and the target 77. Based on the activity sampling studies we split down the improvement opportunity as follows:-

- Process improvement – 8 points ***working smarter***
- Management improvement – 11 points ***managing better***
- Individual performance improvement – 5 points ***working harder***

4.3.1 Performance improvement opportunities

We identified a number of opportunities during our observations, these are some examples:-

4.3.1.1 Working smarter

- Truck movement – we suggested examining truck routes in detail, measuring the benefits of dual cycling, optimising routes and balancing truck numbers. Any improvement here would feed directly through to greater capacity.

- Improved pick layouts – the optimum layout will be very similar for all RDC's. We suggested using slotting software to discover the right combination of pick location types

- Spread of best practice – we encountered too many unnecessary differences between the RDC's. There is a great opportunity to improve performance by optimising and then standardising operating methods.

4.3.1.2 Managing better

- Better workload planning – better overall balancing of resource to demand and better deployment and control of employee.

- Consistent data recording - we found that every RDC has a different way of recording work and that some of the data we gathered was of questionable accuracy

- Management style – we observed that performance would have benefited in all RDC's from a greater shop floor management presence and a more direct, hands-on approach to management.

4.3.1.3 Working harder

- Better monitoring of team members – some individuals, working as part of a team, were consistently under performing

- Start and end of shift – there was a noticeable drop in performance at shift changeover

5. CALCULATING PHYSICAL CAPACITY LIMITS

We recognise that there may be physical limitations in an operation that put an overall limit on capacity. Our approach was to observe key parts of the operation in each RDC and to record the utilisation of resources such as dock doors. We identified the best performing RDC's which then became the benchmarks for calculating capacity.

5.1 Example – despatch dock

There were particular concerns over despatch dock capacity, so we dedicated a series of round the clock observations to all six despatch docks. We used the results to establish capacity limits imposed by dock space and number of dock doors. We observed the docks each hour throughout the morning and afternoon shifts and recorded dock throughput on the day of observation. We counted the number of pallets and other units that accumulated in each area and calculated % utilisation. We also recorded when the dock doors were in use

Our objective was to measure the efficiency of space utilisation by calculating the number of times the space allowed for loading was turned over in an hour.

This table gives a sample of some of the information gathered for the despatch docks.

RDC	Despatch capacity		Despatch door utilisation			Despatch space utilisation		
	Despatch doors	Unit storage capacity	Minimum	Maximum	Average	Minimum	Maximum	Average
1	21	1150	0	7	4	27%	49%	35%
2	25	1320	6	11	8	41%	71%	59%
3	27	1403	1	10	6	35%	71%	53%
4	22	1250	1	10	5	24%	41%	34%
5	14	732	10	13	12	41%	112%	81%
6	32	800	3	9	6	43%	64%	52%

RDC 1 shows a markedly better performance than the other RDC's due to work they were doing on improving material flow. We were able to measure the impact of this work on capacity and then apply it across the network. RDC 5 had a much smaller dock and a building design that restricted material flow.

We took a similar approach to goods in, truck movement and picking.

Our work on physical capacity reassured the client that, with the exception of one building, there was considerable spare capacity in all the RDC's.

6. MATCHING NETWORK CAPACITY TO THE STRATEGIC PLAN

Our argument was that there was untapped capacity available if performance issues were addressed. Indeed, we argued that performance would only improve if resources (and therefore capacity) were reduced and that this also represented a considerable cost saving opportunity.

We analysed wage costs across the network, showing that RDC5 had a disproportionately high direct labour cost.

	Base Year Costs						
	RDC1	RDC2	RDC3	RDC4	RDC5	RDC6	Total
Total direct wage cost	£7,020,904	£7,560,282	£7,321,166	£4,973,595	£4,860,746	£3,146,828	£34,883,519
Total indirect wage cost	£3,302,970	£2,935,282	£3,131,910	£2,844,769	£2,451,030	£2,384,804	£17,050,764
Total wage cost	£10,323,873	£10,495,563	£10,453,076	£7,818,363	£7,311,776	£5,531,632	£51,934,283
% of network throughput	20%	22%	21%	15%	11%	12%	100%
% of network direct wage cost	20%	22%	21%	14%	14%	9%	100%

We then took the throughput growth figures and compared them with the performance improvement potential calculated earlier:-

	Throughput growth					
	Base	Year 1	Year 2	Year 3	Year 4	Year 5
Yr on Yr growth	~~	2.5%	4.1%	4.1%	4.5%	4.8%
Cum v Base Year	~~	2.5%	6.7%	11.1%	16.1%	21.7%
Direct wage cost with no change in performance	£34,883,519	£35,755,639	£37,226,026	£38,738,351	£40,500,202	£42,444,045
Performance improvement curve	53	61	67	71	75	77
Total direct wage cost at improved performance	£34,883,519	£31,066,375	£29,447,453	£28,917,361	£28,620,143	£29,214,732
Target labour saving	£0	£4,689,264	£7,778,573	£9,820,990	£11,880,059	£13,229,313
% reduction in direct labour cost		13%	21%	25%	29%	31%
Direct labour saving from RDC5 closure	£4,860,746	£4,982,269	£5,187,155	£5,397,886	£5,643,386	£5,914,246
Indirect labour saving from RDC5 closure	£2,451,030	£2,451,030	£2,451,030	£2,451,030	£2,451,030	£2,451,030
Savings from labour reduction in RDC network			£2,796,304	£4,633,835	£6,482,173	£7,585,926
Annual saving		£7,433,299	£10,434,490	£12,482,751	£14,576,590	£15,951,202

It was clear that there was excess capacity in the network and that this was a factor in the low performances we were recording.

The client has chosen to close RDC5 this year. In subsequent years the tactic will be to hold labour costs steady and absorb growth.

7. CONCLUSION

Performance management has the power to make considerable labour cost savings but it is more than just a tactical cost saving tool.

This case study has demonstrated the power of good performance information to guide strategic decision taking.

It also shows indirectly that where performance management is already in place, strategic and tactical decisions will be taken much more readily and will be more easily reviewed and adjusted.

Performance management should be viewed as a long term investment that will deliver an immediate and substantial payback and then go on to both maximise performance and support the strategic development of the business.

No professional management team should consider managing without it.

Appendix 1

Detailed analysis of Rated Activity Sampling Studies

MAGNA PARK	AVERAGE RATING	CAPACITY IMPROVEMENT				ANALYSIS OF MANAGEMENT IMPROVEMENT POTENTIAL					
PROCESS		PROCESS	MANAGEMENT	PERFORMANCE	OVERALL	Shift Briefs	Not working	Not in work area	Delay	Breaks	Picker Delay
A' RACK PICK - WALKING	81	0%	7%	5%	12%	0%	4%	1%	0%	3%	0%
MAIN PICK - WALKING	78	19%	2%	8%	30%	0%	0%	0%	0%	2%	0%
BULK/MAIN PICK - LLOP	88	7%	5%	0%	12%	0%	4%	0%	0%	0%	1%
HIGH DENSITY PICK - WALK	73	4%	13%	16%	33%	0%	10%	0%	0%	3%	0%
PICK	81	9%	6%	6%	21%	0%	4%	0%	0%	2%	0%
PUTAWAY	98	0%	26%	0%	26%	1%	2%	0%	17%	6%	0%
REPLEN - A RACK	87	1%	14%	0%	15%	0%	9%	0%	0%	3%	0%
REPLEN - HIGH DENSITY PICK	88	1%	14%	0%	16%	0%	5%	0%	5%	4%	0%
REPLEN - MAIN & BULK ZONES	92	3%	11%	0%	14%	1%	3%	0%	1%	4%	0%
INTERNAL TRANSPORT	91	2%	15%	0%	16%	0%	6%	0%	2%	4%	0%
LOADING DESPATCH VEHICLES	85	13%	21%	0%	34%	0%	9%	0%	8%	4%	0%
UNLOADING EMPTY ULC's	95	7%	22%	0%	29%	0%	17%	0%	2%	4%	0%
CROSS DOCKING (DOORS A TO D)	88	16%	8%	0%	24%	0%	7%	0%	1%	0%	0%
DESPATCH	87	13%	19%	0%	32%	0%	9%	0%	6%	4%	0%
UNLOADING GOODS IN VEHICLES	90	10%	14%	0%	25%	0%	3%	0%	8%	3%	0%
STORE TIPPING	84	7%	23%	1%	30%	0%	5%	1%	13%	4%	0%
BACKLOADING TO NDC's	83	9%	15%	3%	27%	0%	7%	0%	5%	3%	0%
GOODS IN	87	9%	16%	1%	26%	0%	4%	0%	8%	3%	0%

BASILDON	AVERAGE RATING	CAPACITY IMPROVEMENT				ANALYSIS OF MANAGEMENT IMPROVEMENT POTENTIAL					
PROCESS		PROCESS	MANAGEMENT	PERFORMANCE	OVERALL	Shift Briefs	Not working	Not in work area	Delay	Breaks	Picker Delay
N & K BULK PICK - WALKING	77	24%	4%	11%	39%	1%	2%	0%	0%	0%	0%
MAIN (B & C) PICK - WALKING	76	8%	3%	13%	24%	1%	3%	0%	0%	0%	1%
HIGH DENSITY PICK - WALK	80	3%	5%	6%	15%	0%	5%	0%	0%	0%	0%
PICK	77	15%	4%	11%	29%	1%	3%	0%	0%	0%	0%
PUTAWAY - GOODS IN	98	0%	14%	0%	14%	0%	12%	0%	1%	2%	0%
REPLEN	94	0%	6%	0%	7%	3%	3%	0%	0%	0%	0%
INTERNAL TRANSPORT	97	0%	11%	0%	11%	1%	9%	0%	1%	1%	0%
LOADING DESPATCH VEHICLES	82	16%	20%	3%	39%	1%	8%	0%	11%	0%	7%
UNLOAD CROSS DOCK	83	1%	32%	2%	36%	1%	25%	3%	1%	0%	2%
STORE TIPPING	84	6%	33%	1%	40%	1%	29%	0%	3%	0%	0%
BACKLOADING TO NDC's	84	6%	33%	1%	40%	1%	29%	0%	3%	0%	0%
UNLOADING EMPTY ULC's	84	6%	33%	1%	40%	1%	29%	0%	3%	0%	0%
DESPATCH	83	10%	27%	2%	39%	1%	18%	1%	7%	0%	4%
UNLOADING GOODS IN VEHICLES	87	6%	19%	0%	25%	0%	17%	0%	0%	2%	0%

BRIDGWATER	AVERAGE RATING	CAPACITY IMPROVEMENT				ANALYSIS OF MANAGEMENT IMPROVEMENT POTENTIAL					
PROCESS		PROCESS	MANAGEMENT	PERFORMANCE	OVERALL	Shift Briefs	Not working	Not in work area	Delay	Breaks	Picker Delay
UNLOADING GOODS IN VEHICLES	82	0%	23%	4%	28%	0%	17%	0%	0%	5%	1%
STORE TIPPING/BACKLOADING	77	2%	37%	11%	50%	0%	3%	1%	29%	4%	0%
GOODS IN	81	0%	25%	5%	30%	0%	16%	0%	3%	4%	1%
PUTAWAY - GOODS IN	99	2%	4%	0%	6%	3%	1%	0%	0%	0%	0%
REPLEN	96	6%	3%	0%	8%	1%	1%	0%	0%	0%	1%
INTERNAL TRANSPORT	97	4%	3%	0%	7%	2%	1%	0%	0%	0%	0%
ZONE 1 PICKING - WALK	77	9%	7%	11%	27%	0%	6%	2%	0%	0%	0%
ZONE 2 PICKING - WALK	77	6%	6%	11%	23%	0%	3%	0%	0%	3%	0%
ZONE 1 PICKING - LLOP	85	0%	7%	0%	7%	2%	5%	0%	0%	0%	0%
ZONE 3 BULK PICKING - LLOP	83	11%	8%	2%	21%	0%	6%	0%	0%	2%	0%
PICK	79	6%	7%	8%	20%	0%	4%	0%	0%	2%	0%
LOADING DESPATCH VEHICLES	78	4%	22%	9%	36%	0%	12%	2%	8%	0%	0%
FETCH CROSS DOCKING	84	0%	20%	2%	21%	0%	18%	0%	0%	1%	0%
UNLOADING EMPTY ULC's	77	2%	37%	11%	50%	0%	3%	1%	29%	4%	0%
DESPATCH	78	3%	27%	9%	39%	0%	9%	1%	14%	2%	0%

MOSSEND	AVERAGE RATING	CAPACITY IMPROVEMENT				ANALYSIS OF MANAGEMENT IMPROVEMENT POTENTIAL					
PROCESS		PROCESS	MANAGEMENT	PERFORMANCE	OVERALL	Shift Briefs	Not working	Not in work area	Delay	Breaks	Picker Delay
UNLOADING GOODS IN VEHICLES	87	7%	2%	0%	9%	0%	0%	0%	1%	0%	0%
PUTAWAY - GOODS IN	99	0%	2%	0%	3%	2%	1%	0%	0%	0%	0%
REPLEN	94	5%	4%	0%	9%	1%	1%	2%	0%	0%	0%
INTERNAL TRANSPORT	97	2%	3%	0%	5%	1%	1%	1%	0%	0%	0%
MAIN PICKING - WALK	79	9%	0%	8%	17%	0%	0%	0%	0%	0%	0%
BULK PICKING - LLOP	89	9%	6%	0%	15%	1%	5%	0%	0%	0%	0%
SMALL ITEM PICK - WALK	84	4%	0%	1%	5%	0%	0%	0%	0%	0%	0%
PICK	83	8%	2%	4%	15%	0%	2%	0%	0%	0%	0%
LOADING DESPATCH VEHICLES	83	10%	18%	3%	31%	0%	7%	3%	8%	0%	0%
UNLOADING CROSS DOCK	91	0%	8%	0%	8%	1%	3%	5%	0%	0%	0%
FETCH CROSS DOCKING	91	0%	8%	0%	8%	1%	3%	5%	0%	0%	0%
STORE TIPPING	83	1%	1%	3%	5%	1%	0%	0%	0%	0%	0%
BACKLOADING TO NDC's	83	1%	1%	3%	5%	1%	0%	0%	0%	0%	0%
UNLOADING EMPTY ULC's	83	1%	1%	3%	5%	1%	0%	0%	0%	0%	0%
DESPATCH	85	5%	12%	2%	19%	0%	4%	3%	4%	0%	0%

Appendix 2

Activity sampling results by department

GOODS IN	AVERAGE RATING	CAPACITY IMPROVEMENT			
		PROCESS	MANAGEMENT	PERFORMANCE	OVERALL
Magna Park	87	9%	16%	1%	26%
Basildon	87	6%	19%	0%	25%
Bridgwater	81	0%	25%	5%	30%
Mossend	87	7%	2%	0%	9%
All RDC's	85	6%	16%	1%	23%

INTERNAL TRANSPORT	AVERAGE RATING	CAPACITY IMPROVEMENT			
		PROCESS	MANAGEMENT	PERFORMANCE	OVERALL
Magna Park	91	2%	15%	0%	16%
Basildon	97	0%	11%	0%	11%
Bridgwater	97	4%	3%	0%	7%
Mossend	97	2%	3%	0%	5%
All RDC's	95	2%	8%	0%	10%

PICKING	AVERAGE RATING	CAPACITY IMPROVEMENT			
		PROCESS	MANAGEMENT	PERFORMANCE	OVERALL
Magna Park	81	9%	6%	6%	21%
Basildon	77	15%	4%	11%	29%
Bridgwater	79	6%	7%	8%	20%
Mossend	83	8%	2%	4%	15%
All RDC's	80	9%	5%	7%	21%

DESPATCH	AVERAGE RATING	CAPACITY IMPROVEMENT			
		PROCESS	MANAGEMENT	PERFORMANCE	OVERALL
Magna Park	87	13%	19%	0%	32%
Basildon	83	10%	27%	2%	39%
Bridgwater	78	3%	27%	9%	39%
Mossend	85	5%	12%	2%	19%
All RDC's	83	8%	21%	3%	32%

Appendix 3

Growth potential through performance improvement

Basildon								
	Target performance	Week	Peak Throughput	Unit	Items per unit	Units per week potential	Items per week potential	% growth potential
Goods in	75	48	12,077	Pallet	48.15	14,592	702,636	21%
Int transport	85	46	14,041	Pallet	48.80	19,411	947,199	38%
Pick	75	46	726,648	Items	1.00	995,298	995,298	37%
Despatch	75	46	25,976	ULC	50.70	37,571	1,904,741	45%

Magna Park								
	Target performance	Week	Peak Throughput	Unit	Items per unit	Units per week potential	Items per week potential	% growth potential
Goods in	75	47	14,002	Pallet	55.52	18,642	1,034,993	33%
Int transport	85	47	14,750	Pallet	55.52	19,753	1,096,708	34%
Pick	75	46	780,405	Items	1.00	1,049,810	1,049,810	35%
Despatch	75	46	22,156	ULC	50.69	30,138	1,527,587	36%

Bridgwater								
	Target performance	Week	Peak Throughput	Unit	Items per unit	Units per week potential	Items per week potential	% growth potential
Goods in	75	47	11,969	Pallet	59.38	17,988	1,068,149	50%
Int transport	85	47	12,101	Pallet	59.38	11,730	696,544	-3%
Pick	75	46	608,668	Items	1.00	883,050	883,050	45%
Despatch	75	49	16,812	ULC	54.54	48,090	2,623,035	186%

Heywood								
	Target performance	Week	Peak Throughput	Unit	Items per unit	Units per week potential	Items per week potential	% growth potential
Goods in	75	47	15,326	Pallet	51.08	22,608	1,154,751	48%
Int transport	85	47	16,592	Pallet	51.08	22,743	1,161,660	37%
Pick	75	47	757,642	Items	1.00	1,007,735	1,007,735	33%
Despatch	75	48	31,159	ULC	45.70	97,442	4,452,653	213%

Castleford								
	Target performance	Week	Peak Throughput	Unit	Items per unit	Units per week potential	Items per week potential	% growth potential
Goods in	75	46	10,983	Pallet	31.43	21,774	684,245	98%
Int transport	85	48	11,507	Pallet	29.41	17,557	516,269	53%
Pick	75	45	385,011	Items	1.00	511,229	511,229	33%
Despatch	75	24	12,797	ULC	28.03	33,672	943,851	163%

Mossend								
	Target performance	Week	Peak Throughput	Unit	Items per unit	Units per week potential	Items per week potential	% growth potential
Goods in	75	47	8,142	Pallet	49.46	11,793	583,307	45%
Int transport	85	46	8,999	Pallet	46.69	11,519	537,850	28%
Pick	75	46	456,259	Items	1.00	574,929	574,929	26%
Despatch	75	49	19,098	ULC	34.34	48,532	1,666,369	154%

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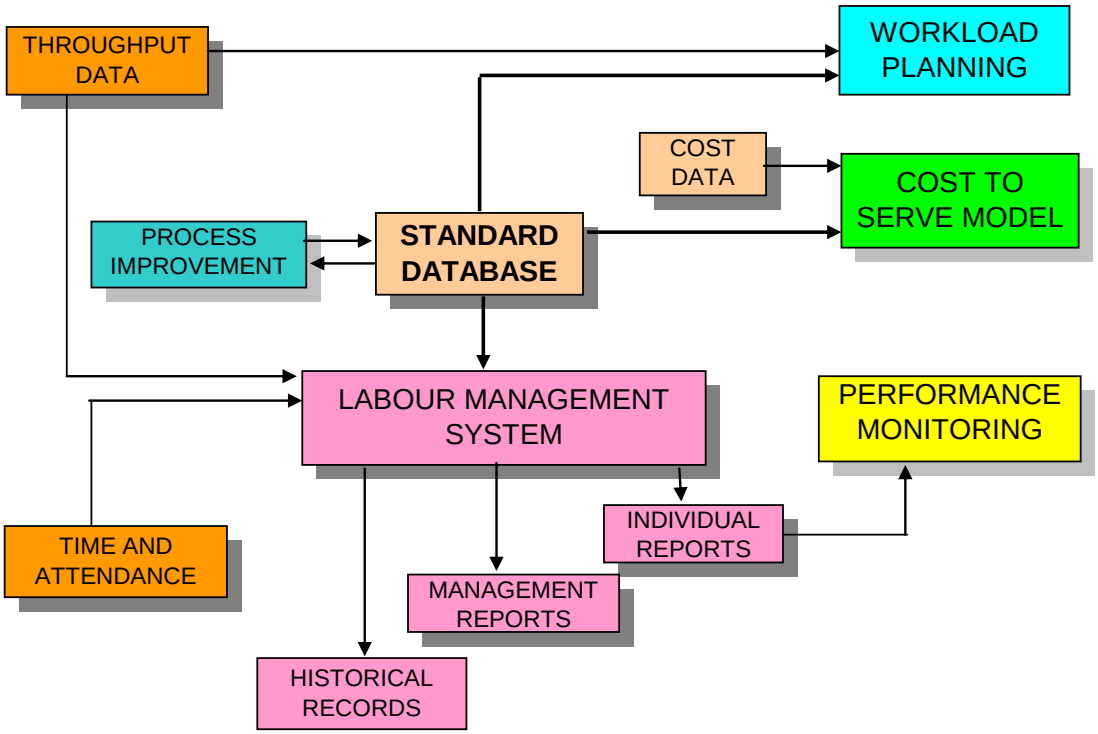
Appendix 4

Diagram of a performance management system



Appendix 5

Capacity modelling results in detail

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Magna Park								
	Peak week	Peak Throughput	Unit	Items per unit	Units per week potential - 15 hour day	Units per week potential - 20 hour day	Items per week potential - 15 hour day	Items per week potential - 20 hour day
Goods in	47	14,002	Pallet	55.52	22,595	30,126	1,254,480	1,672,640
Int transport	47	14,750	Pallet	55.52	16,079	21,438	892,703	1,190,270
Pick	46	780,405	Items	1.00	808,198	1,077,598	808,198	1,077,598
Despatch	46	22,156	ULC	50.69	25,957	34,610	1,315,663	1,754,217

Basildon								
	Peak week	Peak Throughput	Unit	Items per unit	Units per week potential - 15 hour day	Units per week potential - 20 hour day	Items per week potential - 15 hour day	Items per week potential - 20 hour day
Goods in	48	12,077	Pallet	48.15	31,285	41,714	1,506,457	2,008,609
Int transport	46	14,041	Pallet	48.80	16,491	21,988	804,730	1,072,974
Pick	46	726,648	Items	1.00	808,198	1,077,598	808,198	1,077,598
Despatch	46	25,976	ULC	50.70	19,035	25,380	965,022	1,286,696

Heywood								
	Peak week	Peak Throughput	Unit	Items per unit	Units per week potential - 15 hour day	Units per week potential - 20 hour day	Items per week potential - 15 hour day	Items per week potential - 20 hour day
Goods in	47	15,326	Pallet	51.08	26,071	34,761	1,331,630	1,775,507
Int transport	47	16,592	Pallet	51.08	16,380	21,988	836,637	1,123,086
Pick	47	757,642	Items	1.00	808,198	1,077,598	808,198	1,077,598
Despatch	48	31,159	ULC	45.70	34,610	46,146	1,581,503	2,108,670

Bridgwater								
	Peak week	Peak Throughput	Unit	Items per unit	Units per week potential - 15 hour day	Units per week potential - 20 hour day	Items per week potential - 15 hour day	Items per week potential - 20 hour day
Goods in	47	11,969	Pallet	59.38	17,381	23,174	1,032,061	1,376,081
Int transport	47	12,101	Pallet	59.38	14,800	19,733	878,801	1,171,735
Pick	46	608,668	Items	1.00	808,198	1,077,598	808,198	1,077,598
Despatch	49	16,812	ULC	54.54	28,120	37,494	1,533,799	2,045,065

Castleford								
	Peak week	Peak Throughput	Unit	Items per unit	Units per week potential - 15 hour day	Units per week potential - 20 hour day	Items per week potential - 15 hour day	Items per week potential - 20 hour day
Goods in	46	10,983	Pallet	31.43	15,643	20,857	491,568	655,425
Int transport	48	11,507	Pallet	29.41	11,338	15,117	333,389	444,519
Pick	45	385,011	Items	1.00	777,891	1,037,188	777,891	1,037,188
Despatch	24	12,797	ULC	28.03	12,113	16,151	339,544	452,726

Mossend								
	Peak week	Peak Throughput	Unit	Items per unit	Units per week potential - 15 hour day	Units per week potential - 20 hour day	Items per week potential - 15 hour day	Items per week potential - 20 hour day
Goods in	47	8,142	Pallet	49.46	13,905	18,539	687,753	917,004
Int transport	46	8,999	Pallet	46.69	15,713	20,951	733,656	978,208
Pick	46	456,259	Items	1.00	808,198	1,077,598	808,198	1,077,598
Despatch	49	19,098	ULC	34.34	13,844	18,458	475,333	633,778