ROY HILL USE CASE : IBP IN AN MRO SETTING

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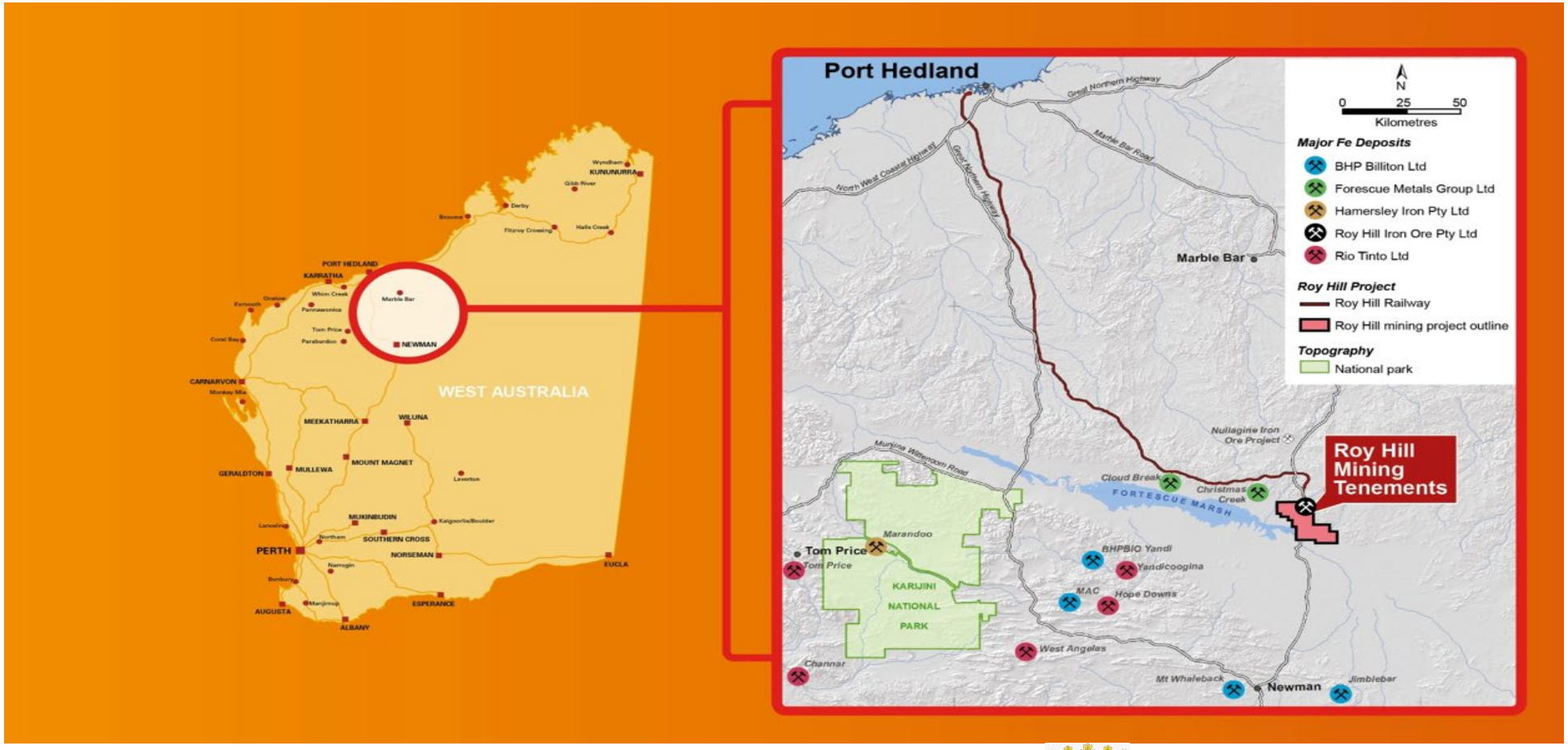
LEAD • CARE • THINK • PERFORM

Roy Hill : Overview



RH Railway Track distance (344 KM) : Madrid to Sevilla

ROC to Port Hedland distance (1600 KM) : Madrid to Milan

Roy Hill Supply Chain Network

RTY

Courier – PSA/MSA

Vendor/Supplier
Port Hedland

Courier - RTY

PSA

Transfer between
RTY MSA & PSA

Internal
Transfer

MSA

Sea Freight via
Port Hedland

Vendor/Supplier
Newman/Port Hedland

Sea Freight via
Fremantle

Transfer RHDC to
remote facilities /
backfreight

Transfer RHDC to remote
facilities / backfreight

RH Freight supplier

Vendor/Supplier
Metro Region

Courier service – Metro Region

RHDC

Roy Hill Distribution Centre – ROC Perth Airport

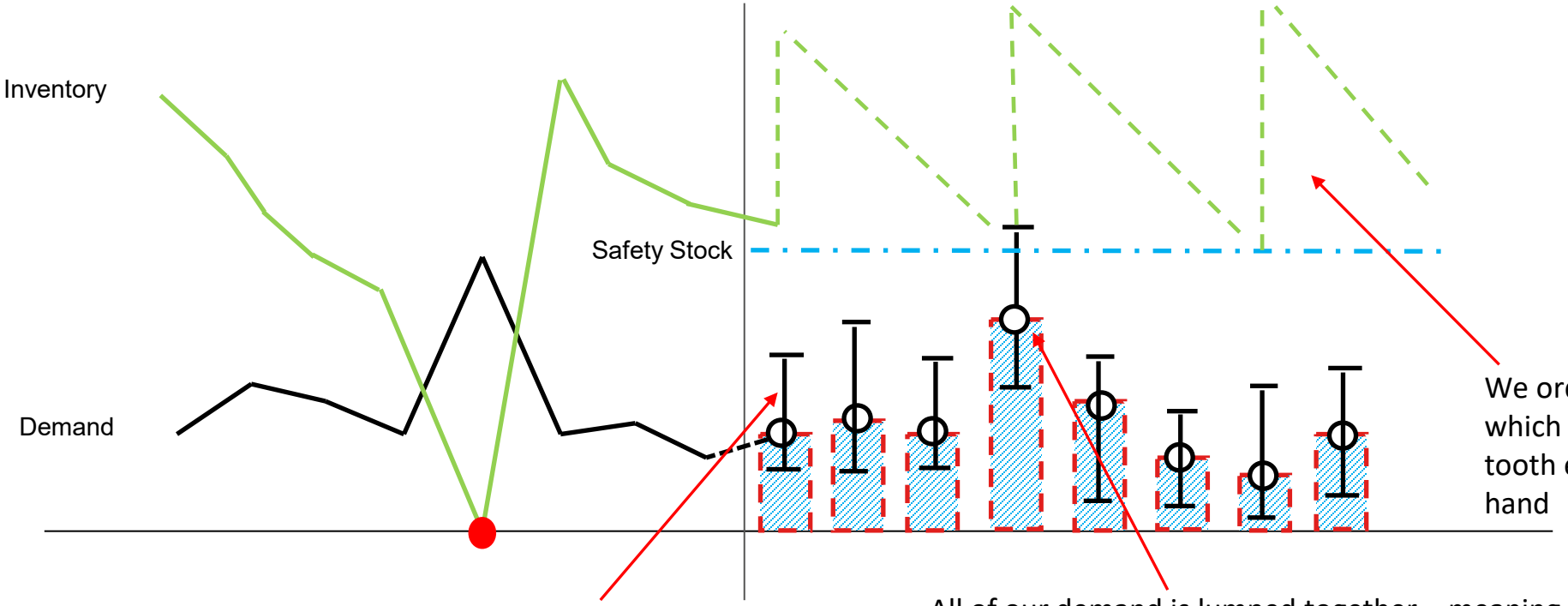
Heavy Haulage direct from Port to site

Agenda

S.No	Topic
1	Introduction : Roy Hill Overview
2	Supply Chain Network Model
3	Current Situation
4	IBP : Solution Approach
5	IBP : Results & Learnings
6	Ongoing Innovations : Rotables Pool Size Optimiser
7	IBP : Continuous Improvement and Next Steps

How did we get there? The Current Situation

The base scenario assumes a traditional Min/ Max and Lot size approach, with a forecasted inventory using a 12 month historical view as the input for the simulation. By implication emergency stock levels are influenced by a mixture of planned and unplanned demand



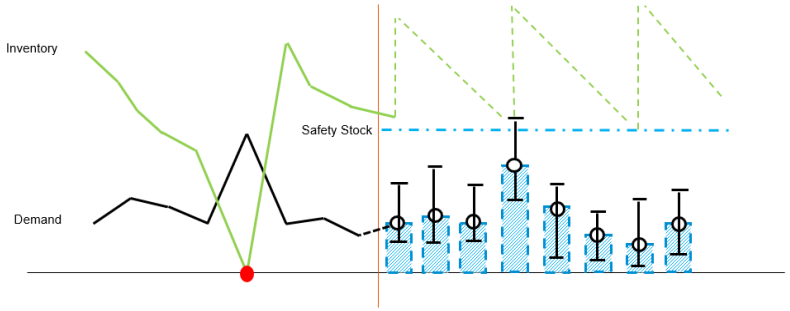
We order in fairly large batch quantities which means that we have a large saw tooth effect which drive a high stock on hand

We have very high variability around the forecast – Coefficient of variation >1 which means the variation at any given time can be more than 100%

All of our demand is lumped together – meaning it is difficult to distinguish Planned activity with unplanned activity – so we treat them all the same. This results in higher peaks which means we maintain higher safety stocks.

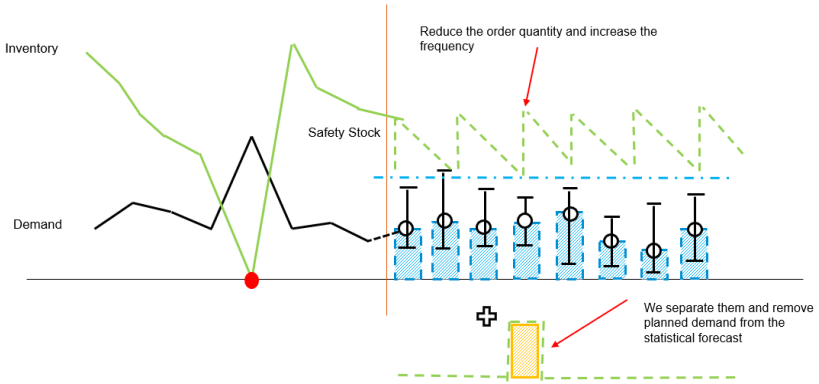
How did we get there?
Our goal is to provide a path forward by moving 3 maturity phases

Possible today
(Optimise Statistically on usage alone)



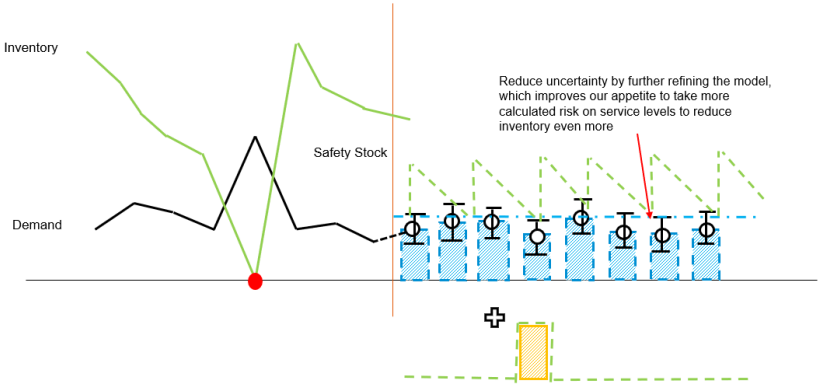
Phase 1 – manage inventory as a buffer to operations and attempt to optimise based on statistical variation. Because variation is high the optimiser will force you to hold higher buffer inventories to deal with the high uncertainty

Medium Term – reduce demand uncertainty
(Separate Planned and Unplanned work)



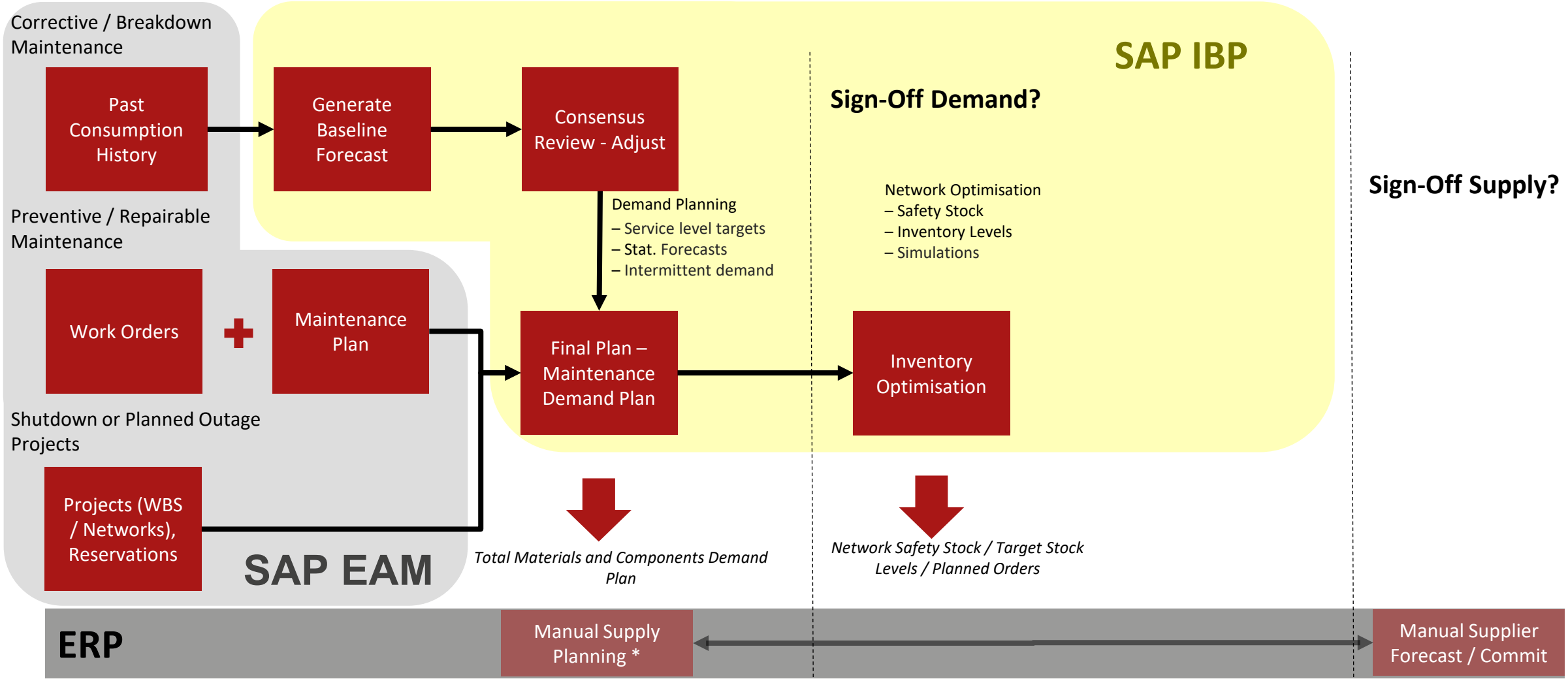
Phase 2 – manage inventory as a buffer to unplanned operations and rely on MRP to manage planned activity using an order planning method. This means you have less exposure to uncertainty as you can plan MRO materials for planned work and only carry working capital for the unplanned component

Future – reduce supply uncertainty
(Integrate with suppliers)



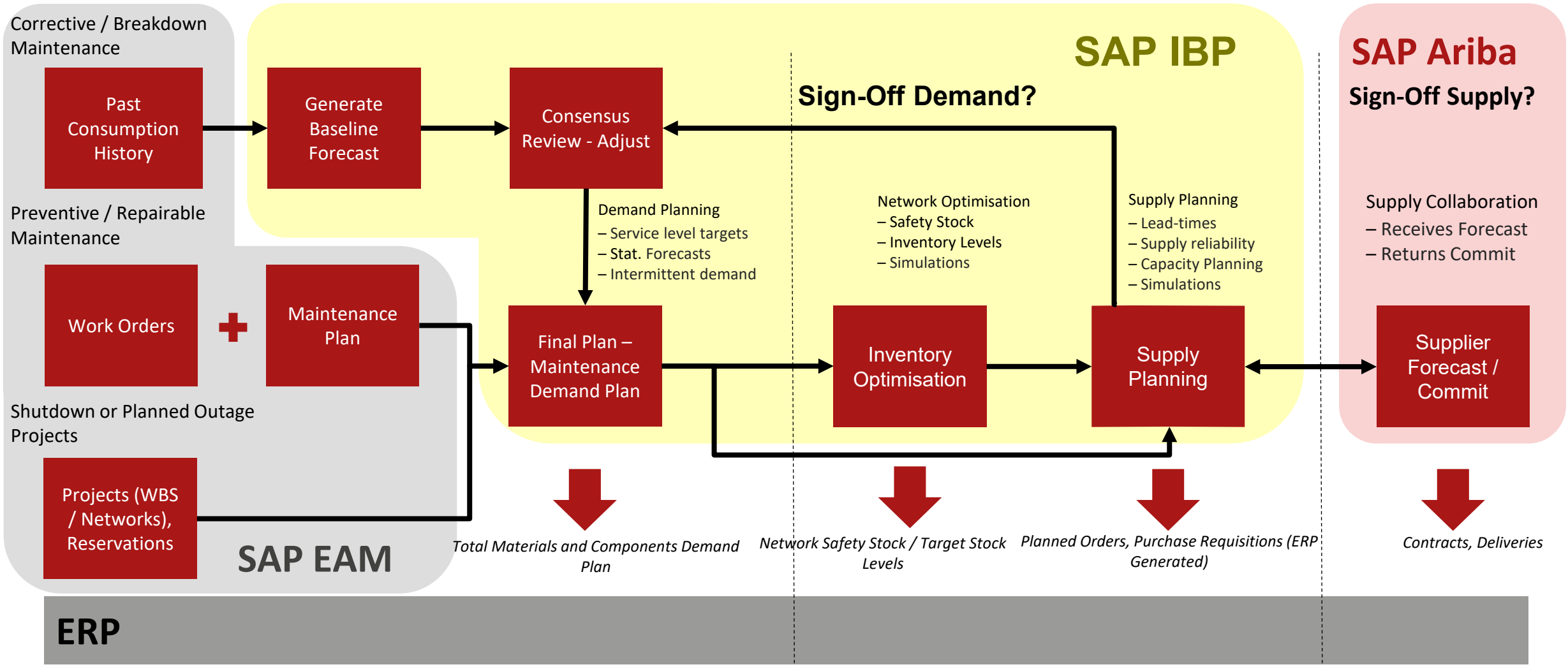
Phase 3 – Optimise total inventory base by reducing supply uncertainties. For the 3rd phase we would measure the actual lead times and variation and then seek to reduce them through supplier collaboration

IBP : Solution



** Operational only, not Mid or Long Term*

IBP : Future State



IBP : Value Proposition Realisation

$16.8M inventory optimisation identified since go live Sep-21 and $5.5M reduced with $3.2M bled

Opportunities

Recommended Change to Demand Driven from Min Max

$8,700,000

(Cumulative = $16.8M)

$8.7M opportunity across 2700 material. Demand Driven = IBP consensus forecasts + safety stock not Min Max

Risks/Dependency: Team capacity/resources to roll out process element in line with implementation plan

Recommended Max reduction

$2,600,000

(Cumulative = $8.1M)

$2.6M opportunity across 2800 material

Risks/Dependency: Team capacity/resources to roll out process element in line with implementation plan

Actioned

Actioned Max Reductions and Changes to Demand Driven

$2,300,000

(Cumulative = $5.5M)

$2.3M reduced across 3346 material

SOH Bled to new Max or Safety stock

$3,200,000

(Cumulative = $3.2M)

$3.2M reduced and bled across 1798 material

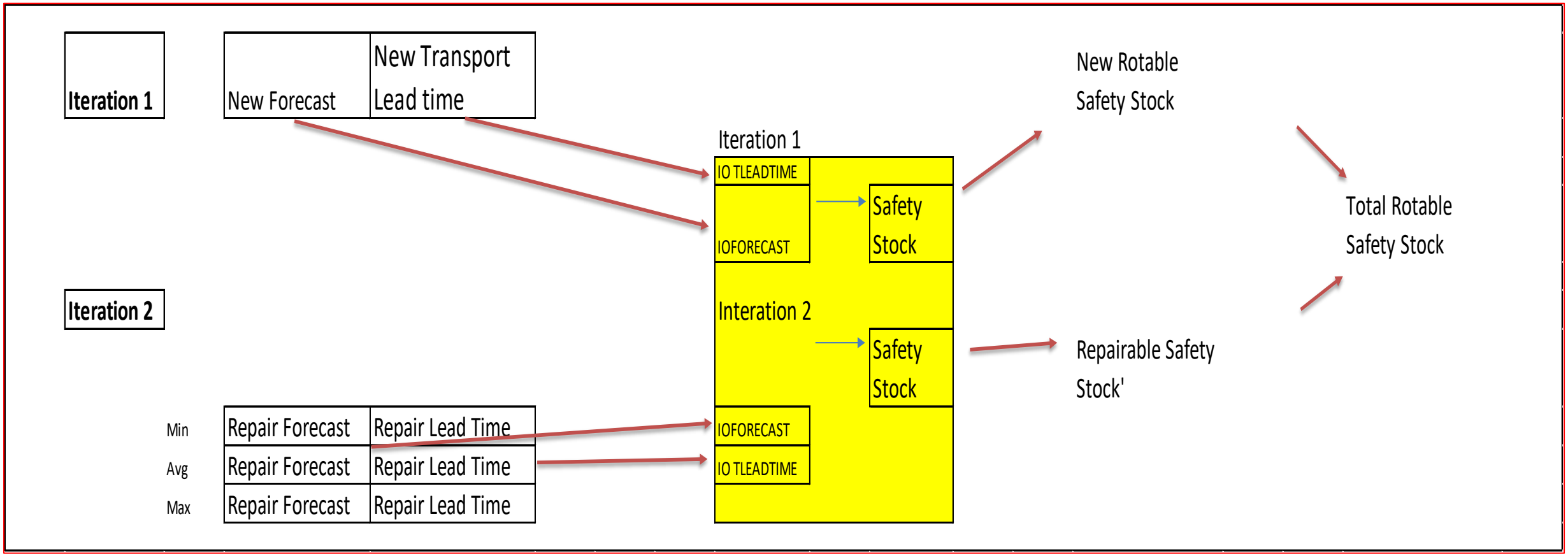
Latest estimated value delivery	
FY22	FY23
$5.5M	$11.3M

Note: Estimated value delivery is based on implemented changes to min/max levels; stock bleed down will take longer depending on usage

Continuous Improvement : IBP FY23 Delivery

	T1 Jul – Oct 22’	T2 Nov – Feb 23’	T3 Mar – Jun 23’
IBP Business Case Value Realization	MSA Demand Driven $1.4M 715 Material Max Reductions $260K 680 Material	MSA Demand Driven $1.4M 715 Material Max Reductions $260K 680 Material	MSA Demand Driven $1.4M 715 Material Max Reductions $260K 680 Material
	PSA Demand Driven $1.1M 140 Material Max Reductions $178K 220 Material	PSA Demand Driven $1.1M 140 Material Max Reductions $178K 220 Material	PSA Demand Driven $1.1M 140 Material Max Reductions $178K 220 Material
	RTY Demand Driven $0.42M 45 Material Max Reductions $285K 90 Material	RTY Demand Driven $0.42M 45 Material Max Reductions $285K 90 Material	RTY Demand Driven $0.42M 45 Material Max Reductions $285K 90 Material
IBP Process & People	Process & Design: establish IBP cycle and internal sign off collaboration with engineering, long term planning, commercial etc. with locked in meetings in calendars		
	Vendor Engagement: Forecast Sharing and Meetings		
	Upskill Users and Stakeholders leveraging superusers and Bristlecone (T1 Conveyor Systems Team)		
IBP System	Finalise Rotables Inventory Optimisation Solution		
	Improve Inventory Opt Solution for Erratic Material		
	Finetune stat forecast and safety stock models		
	Reporting Automation (IBP Dashboard and Analytics)		
	Continue Exception Reporting Build		
	IBP for Maintenance Budget (verify, workshop, support implementation)		
	Record critical spare / breakdown quantity with notes in IBP		

Ongoing Innovations : Rotables – Pool Size Optimiser



Other Benefits & Questions

Accuracy / Productivity

- Improved forecast accuracy of spares demand
- Phase In Phase Out Planning
- Demand based procurement of spares as per forecast rather than holding inventory
- Exception based plan management, leads to enhancement in productivity
- **Use of statistical forecasting to improve Maintenance master data**

Greater Visibility

- Inventory Projection - Better visibility of inventory situation of spares
- **Improved management level reporting through customized KPI tracking reports, dashboards & analytics**
- Visibility of total demand of spares and nature of demand including WBS, PM05 & Cost centres.
- Improved visibility of warehouse storage requirements across months (in terms of amount of different spares to be stored)

Inventory Optimization

- Improved service levels by exception handling and right stocking
- Reduced obsolescence of inventory
- Improved inventory planning through product classification based on failure mode, frequency cost, criticality and variability
- Better visibility of rotables pool size
- **Automation of MRP parameters, stocking strategy updates**

Enhanced Collaboration

- **Collaboration with external suppliers with possibility to share forecast**
- What-if simulations to make better informed decision between spares, PM and asset management.
- Tighter integration with working capital requirement and maintenance cost budget through financial impact analysis of proposed plans

Thank You for the Opportunity!