

Agenda

- Introduction
- Background
- CWC Methodology

Introduction to the Project

- This presentation tells you about CWC's Improvement Programme known as Improve
- It explains why it is relevant to HA
- It introduces the history and theory of process improvement and how CWC has developed a model for construction
- It tells you all about a six-stage improvement programme
- It explains how it is led and managed
- It is jargon-free and based on practical hands-on work

What theory is it based on?

CWC's unique approach is an evolution of the established theory on process improvement:

“Lean”

A way to do more and more with less and less whilst delivering exactly what the customer wants at minimum cost

“Six Sigma”

Adopts a customer focus identifying where variability exists in a process and then providing the tools to reduce variability and improving performance

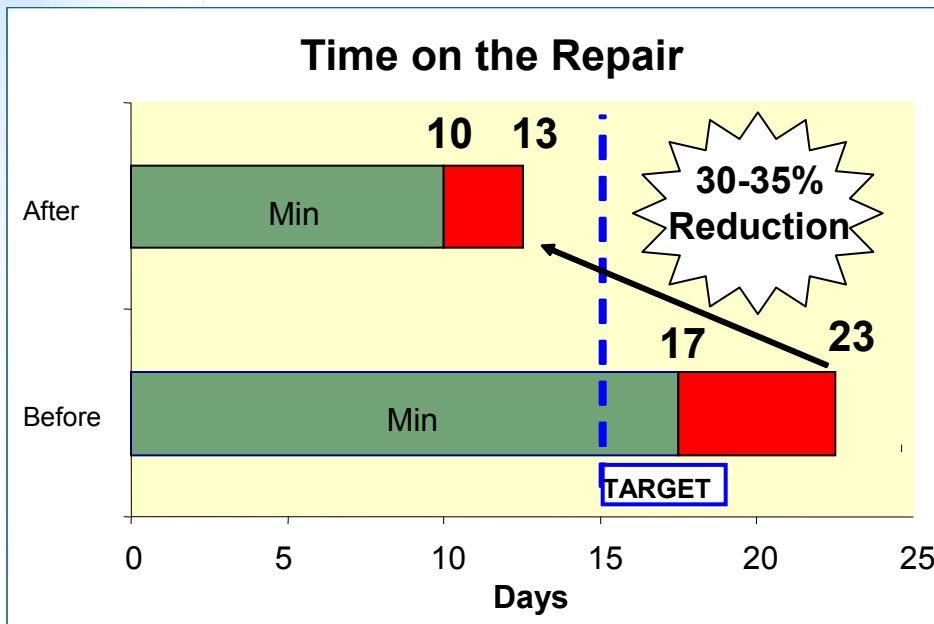
Reducing Repair Time

Achieved with:

- Increase in number of repairs
- Same level of resource
- Improved management & control

Outcomes:

- 1 Quality improved **↑ 77%**
- 2 Client Satisfaction **87 → 93%**
- 3 Project costs kept at original level throughout 5-year programme
- 4 £2m+ saving



The 3 Elements of Work



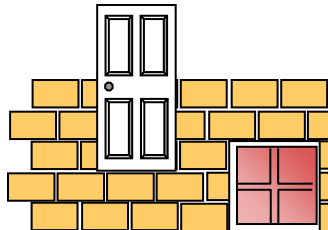
Value Adding

Any work that changes the nature or shape of the works – **Maximise**



Non-Value Adding

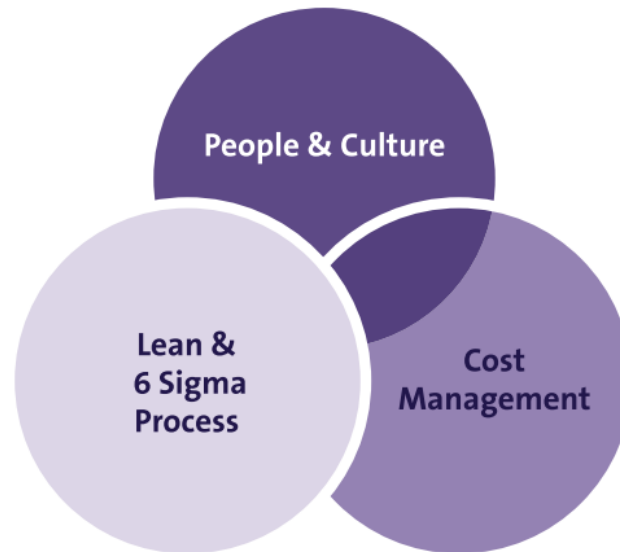
Any work that is necessary under current conditions but does not increase works value – **Minimise**



Waste

All unnecessary work – **Eliminate**

CWC Approach



It isn't rocket science

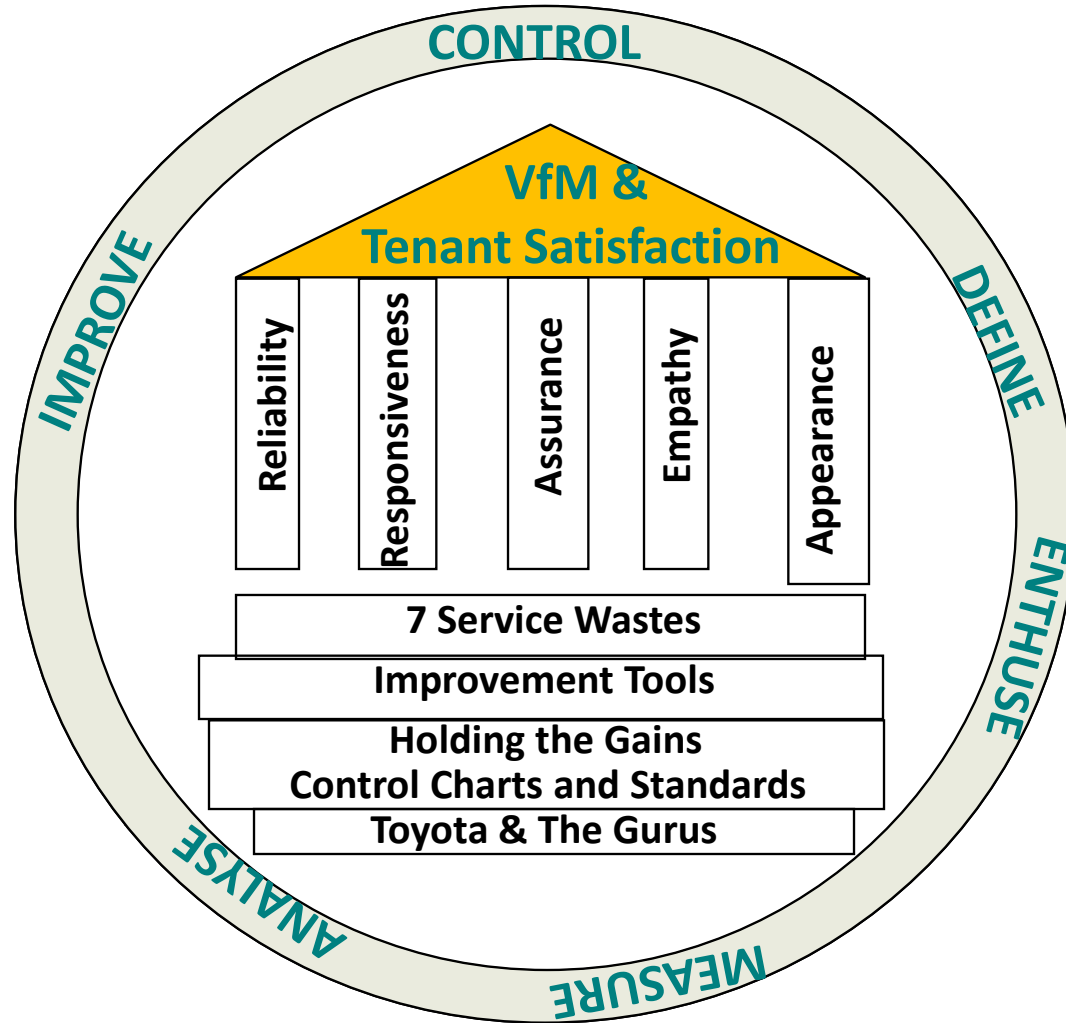
- In the 1960's NASA employed a team of engineers at a cost of \$1.5 million to design a pen that would write in the vacuum of space...
- ...the Russians took a pencil
- We will work on improvements without unnecessary complexity
- Most of the work will be done by the staff



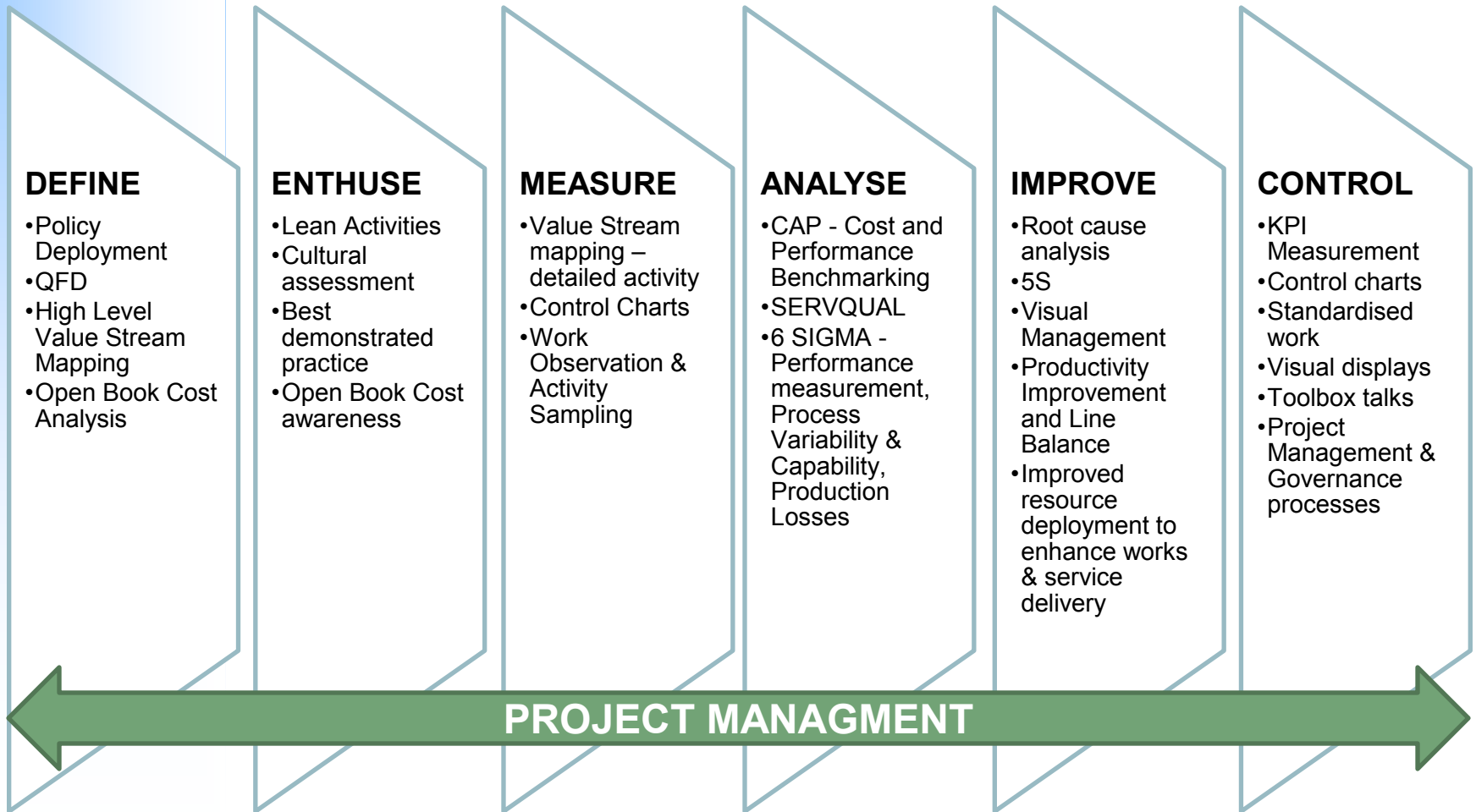
What will the programme cost?

- A significant management input is needed
- CWC's input is cost neutral
 - CWC will work at risk for fees incurred
 - Client will not pay fees unless savings in excess of the fee level are identified

The CWC Lean-Sigma Model



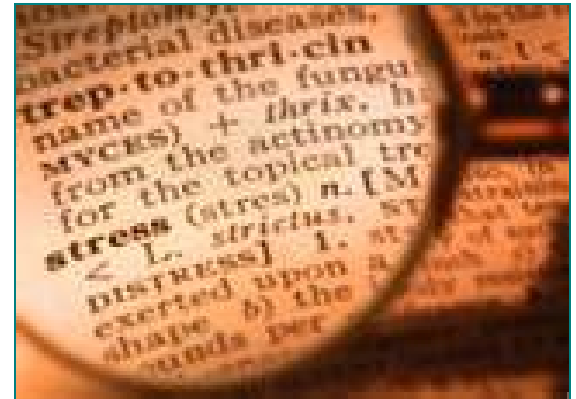
Tools and Techniques



Step 1 Define

The purpose is to define :

- What the customer values
- The context, scope, expectations of the improvement programme
- The overall 'vision' of the Service
- 'Short-term' objectives
- How the programme will be delivered;
 - Programme schedule
 - Commitment and support to make-it-happen!
 - Roles & responsibilities – team and champion
 - Project management & governance



Step 2 Enthuse

The purpose is to :

- Enthuse all concerned to participate and support the improvement programme
 - Awareness
 - Alignment
 - Acceptance
 - Involvement
 - Achievement
 - Sustainability
- Accept Change
- Draft a charter



Step 3 Measure

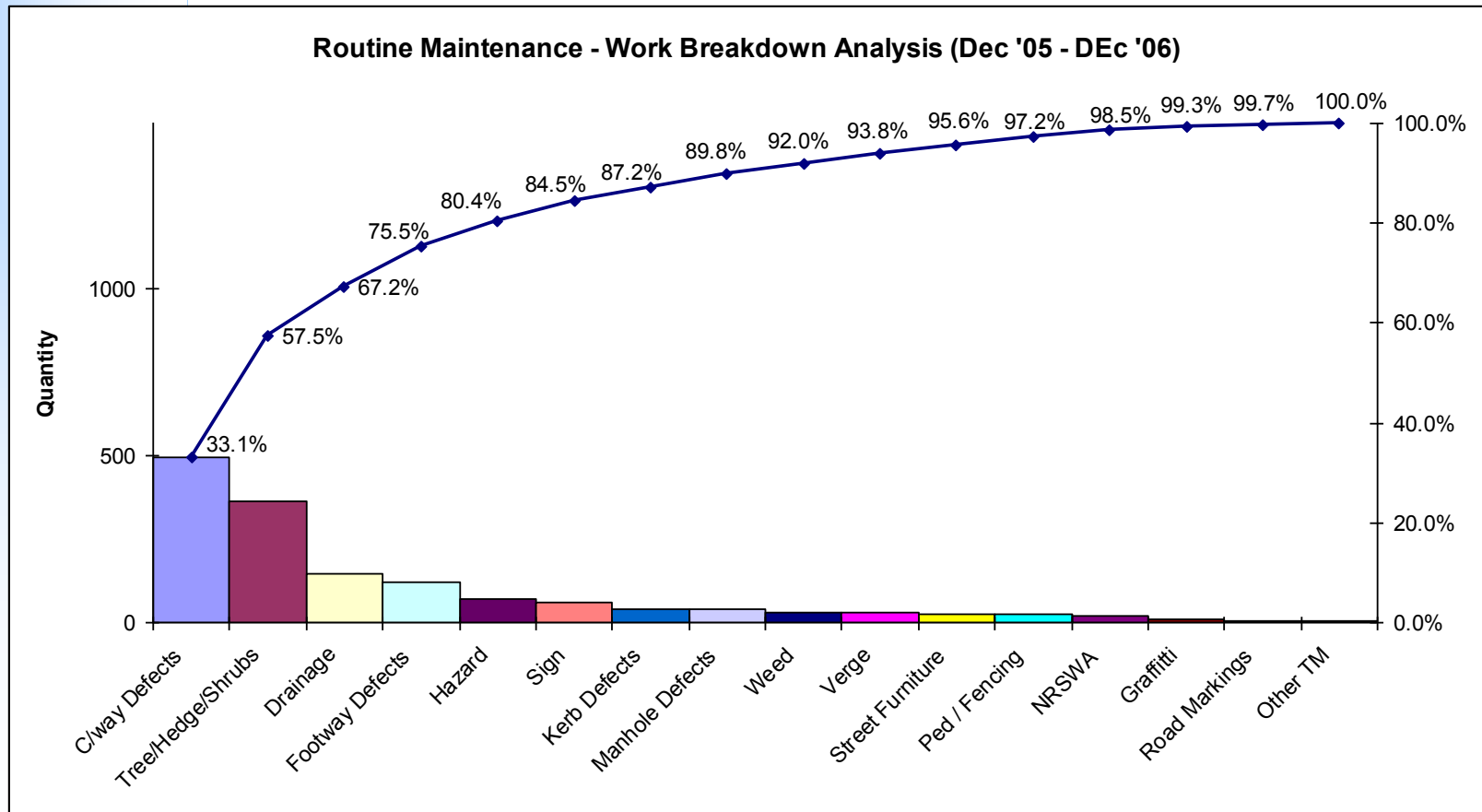
The purpose is to collect appropriate data :

- What gets measured, analysed and reviewed leads to what is acted on
- We will focus on the real key measures
- For each service area we need to know;
 - How many service events per year (e.g. phone call)
 - How many per million go wrong
- This will be very hands-on looking at real processes



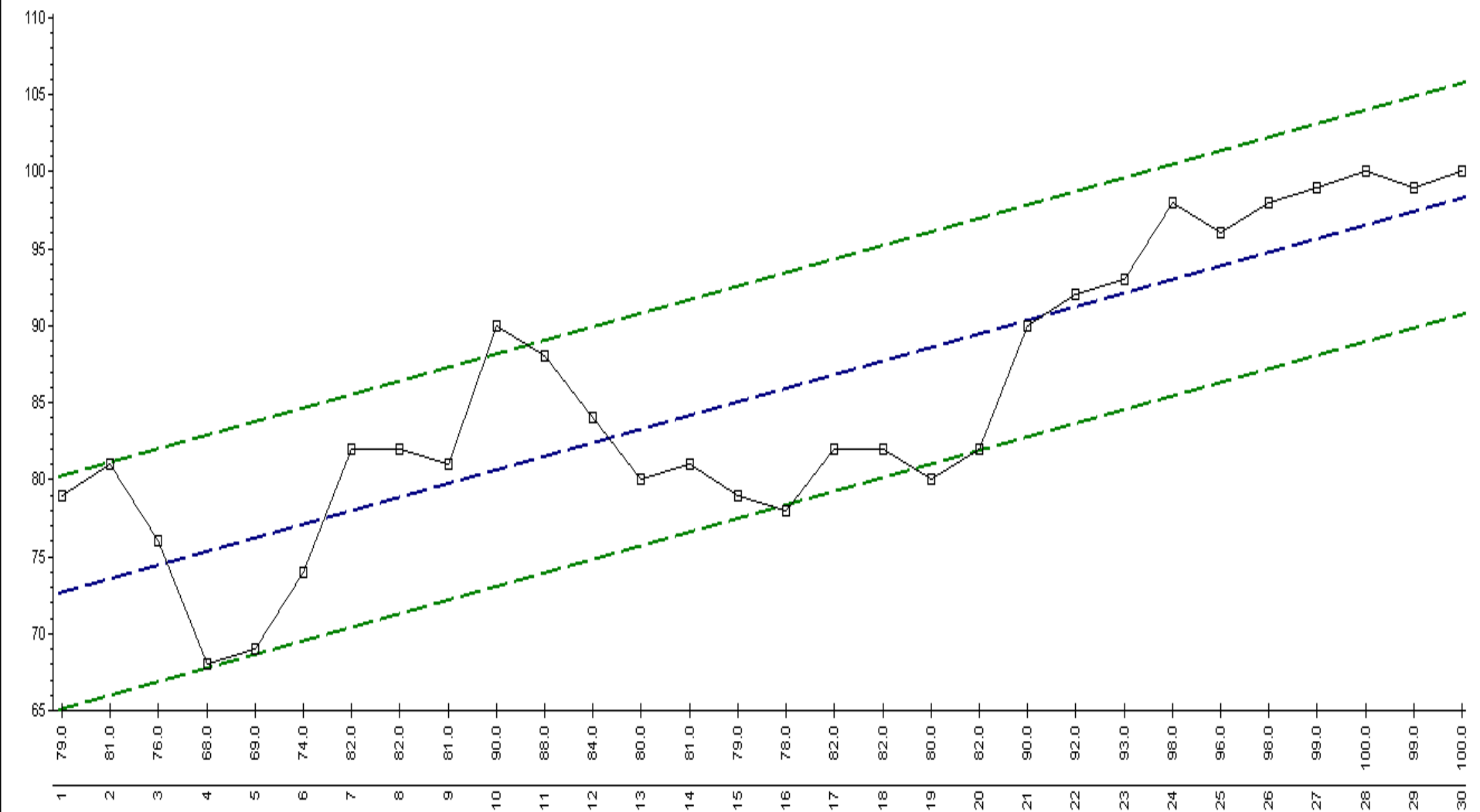
Diagnostic – Capturing the Current State

Breakdown of Work Conducted by RM Gangs



33% of work carried out by RM gangs was attributed to C/way Defects followed by 24.4% on Trees/Hedges/Shrubs.

% Jobs Completed 1st Time



Start 1
 U.C.L. =80.3 to 105.7
 Mean =72.7 to 98.2
 L.C.L. =65.2 to 90.6

Step 3 Measure

Understand the structure of costs

- Cost of the works
 - Labour
 - Plant
 - Material
 - Subcontractors
- Preliminaries (cost of directly managing the works)
- Overheads
- Profit
- Risk
- Client Cost of Managing the works

Step 3 Measure

What does this give us?

- The whole team have an understanding of true costs
- Allows informed decisions
- True cost information underpins Lean initiatives
- Understanding of costs through the whole delivery

Step 4 Analyse

The purpose is to:

- Diagnose the current state
- Understand how well work activity is being delivered
 1. Value added
 2. Non-value added
 3. Waste
- How well is the 'system' performing to meet the needs of the Customer
- Basis from which to develop an improved 'future state' process
- Identify & prioritise opportunities to improve



What kinds of waste are there?

7 elements of waste

- Overproduction
- Waiting
- Transporting
- Overprocessing
- Unnecessary Inventory
- Unnecessary Motion
- Defects

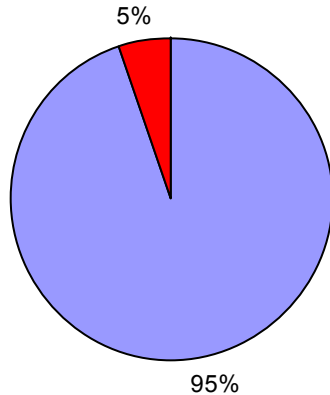
7 Service Wastes

- Delay
- Duplication
- Unnecessary Movement
- Unclear communication
- Incorrect inventory
- Opportunity Lost
- Errors

Diagnostic – Understanding the causes and level of ‘Production Losses’

Routine Maintenance - Lost Time Analysis

Data Period : W/c 26 Feb to W/c 16 Apr
Data Sample: RM Gangs, Hook Depot
Data Collection: Via the RM Gangs
Date Drawn: 12-6-07
Drawn by: ROC

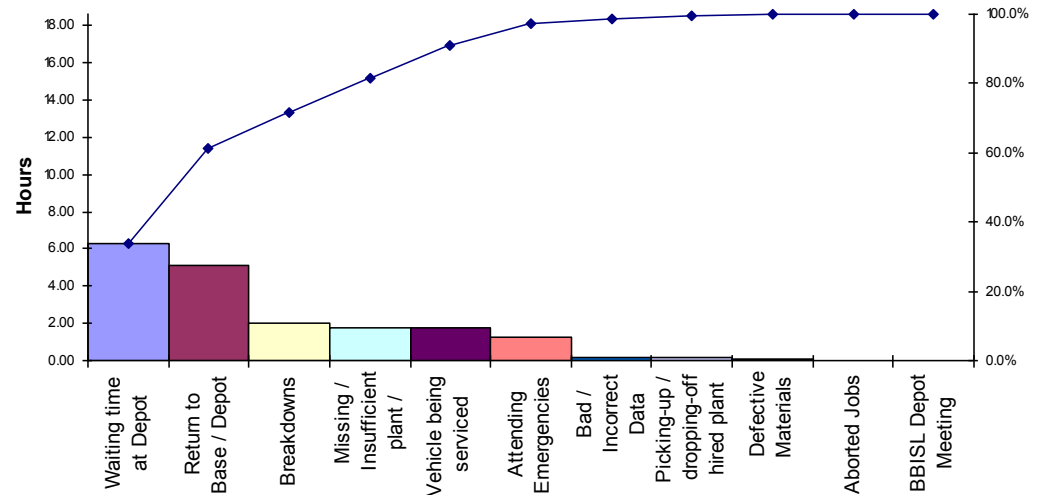


The Pareto Analysis shows the key factors that make-up the 5%.

5% of the available time to do productive work was lost. (Note; this excludes time lost due to travel time).

The CWC team felt that this ‘Production Loss’ data capture should be repeated, including capture of travel time, and checks made to assess the integrity of data collected.

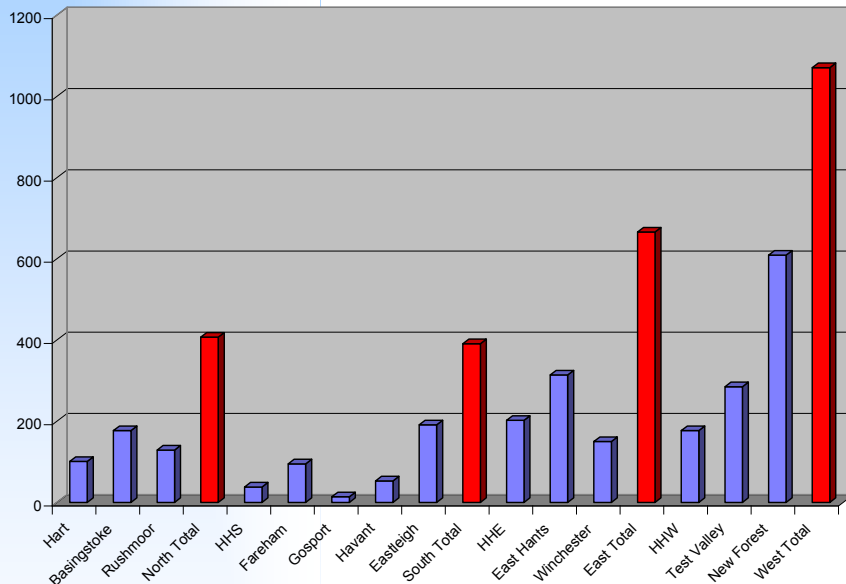
Pareto Analysis of Factors Contributing to Lost Time



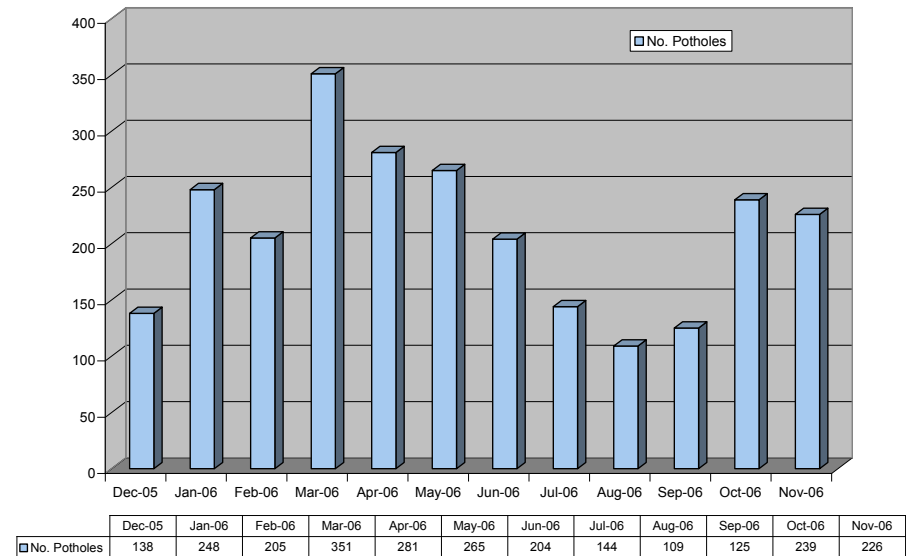
Diagnostic – Capturing the Current State

Breakdown of Work Conducted by RM Gangs

Total No. potholes recorded on PEM per Area (Dec-05 to Nov 06)

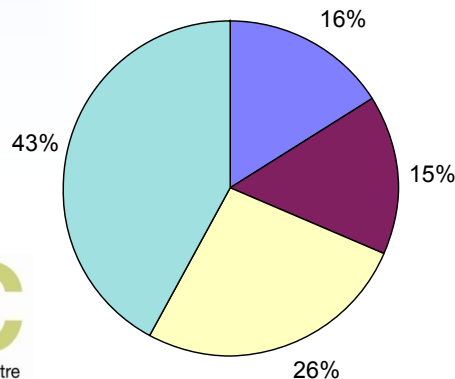


No. Potholes per month recorded on PEM for all Areas (Dec-05 to Nov-06)



Peak time for dealing with Pot Holes focused through the months of Spring

Breakdown of Pot Hole Work conducted by RM gangs (Dec 05 Dec 06)



Over 42% of the total Pot Hole repair work carried out by RM gangs was located in the 'West' region

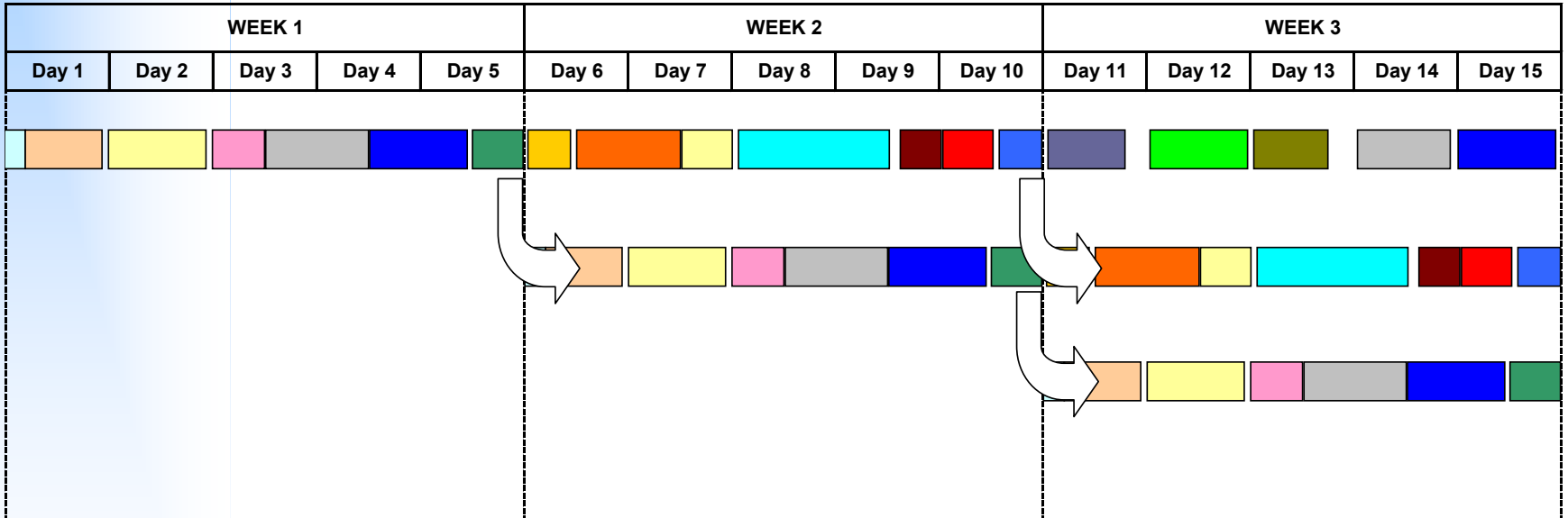
Stage 5 Improve

The purpose is to:

- Apply proven tools and techniques to deliver real, tangible improvements:
 - Overall set-up and organisation
 - Planning, management & control
 - Systems, Practices, Processes
 - Productivity
 - Production Losses
 - Logistics
- Take a Customer focused view in-line with the defined Future State System / Process
- Improving Quality, Delivery, Cost, Satisfaction



Standardising Work Activity Even Flow Production

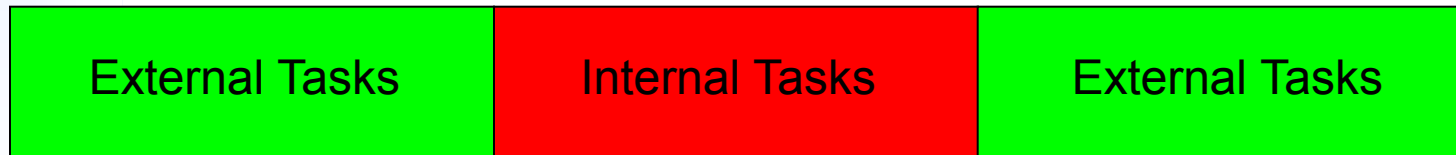


- Work activity pattern repeats
- Agreed improved interaction of operatives
- Easier to plan, organise and control
- Productivity improvements result

Applying the Concept of Changeover Time Reduction Techniques

What is Changeover Time Reduction?

- Originates from the Single Minute Exchange of Die (SMED) concept, as applied extensively within manufacturing businesses to help maximise the time available for machines and processes to produce components, etc.
- Whenever a machine is changed over to enable production of a different component, a series of tasks will be carried out. The SMED technique identifies all of the changeover tasks that must be carried out and allocated them into one of two categories:
 - **INTERNAL** : All tasks that must be when the machine is stopped
 - **EXTERNAL** : All tasks that can either be prepared before the machine is stopped & tasks that can be done when the machine is restarted



- The primary aim is to optimise the process for carrying out the INTERNAL tasks so they are completed in a safe manner and in the shortest possible time

Depot – Improving Gang Turn-Around Time

It was agreed that target criteria for defining how well Teams ‘flow’ through the Depot should be set:

i.e. **20 minute turn-around time and out on the road by 8:00** (or 8:15am depending on gang’s terms & conditions)

The concept of ‘SMED’ (see pervious slide) were introduced to the CWC Team, and tasks required to complete the loading-up of lorries categorised into INTERNAL and EXTERNAL activities

Pre-EXTERNAL	INTERNAL	Post-EXTERNAL
<ul style="list-style-type: none">• Forward visibility of the planned work (e.g. 3-5 day forward schedule) that is ‘topped’ up with ‘emergency’ jobs• Vans / lorries refuelled• Tools / equipment required to support the scheduled jobs ready• Materials (where possible) prepared in advance of the van / lorry loading time• ‘Visual’ display board ready to show the order of vehicle loading• All loading plant fully manned to ensure the loading schedule can be carried out effectively	<ul style="list-style-type: none">• Conduct loading activities in-line with defined Loading Schedule• Where possible, conduct any activities concurrently (e.g. 1st gang member to carry out loading, 2nd gang member to deal with any paperwork tasks, etc)• LHE to be available during the defined loading window to direct work gangs as necessary• Depot management / supervision to oversee the efficient ‘flow’ of gang loading activities to ensure the 20 minute turnaround is achieved	<ul style="list-style-type: none">• Paperwork completed by the 2nd gang member when on the road• Any material spoils to be ‘cleared-up’ as required by designated Depot worker(s)• Materials, plant and equipment to be prepared ready for the next day’s schedule of work for each gang• At ‘end-of-day’, preload vans / lorries as much as possible

Basic overview of Loading activities. Detailed work tasks & sequence to be defined. Also repeat for ‘End-of-Day’ Depot activities.

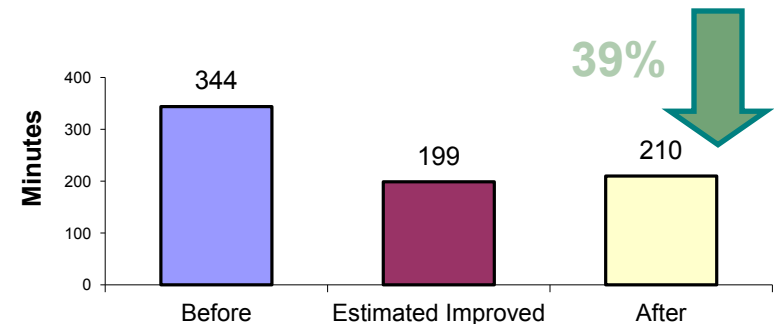
Improving On-Site Delivery

Improvements

- Direct observation
- Work specification
- Innovation in products & materials
- Work methods



Reduced Time for 1st Fix Electrics



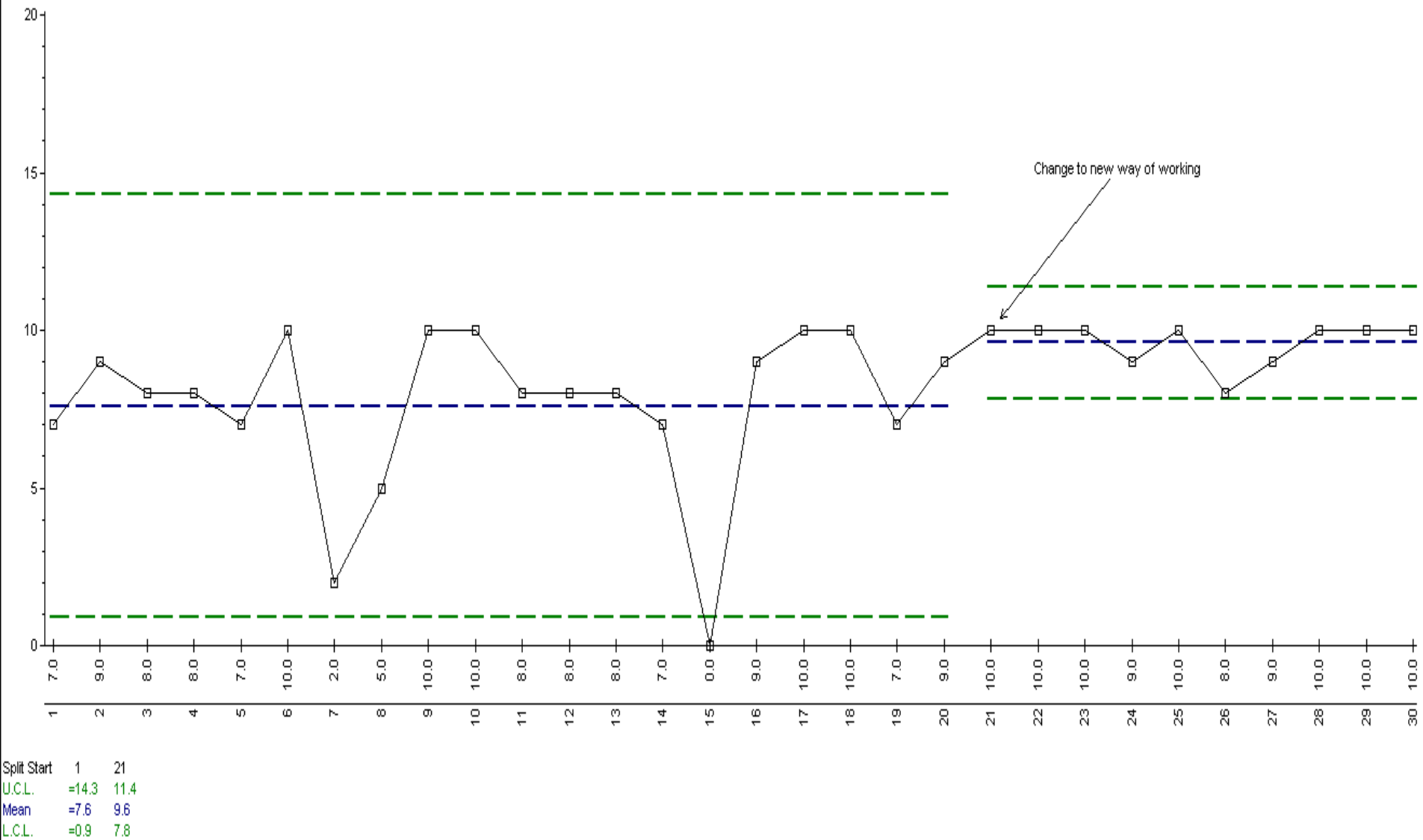
Stage 6 Control

The purpose is to:

- Ensure sustainability
- Establish how the improved process should be carried out
- Appropriate service delivery measures
 - (e.g. Control Charts)
- Create / encourage ownership
- Ensure in-house capability
- Change management



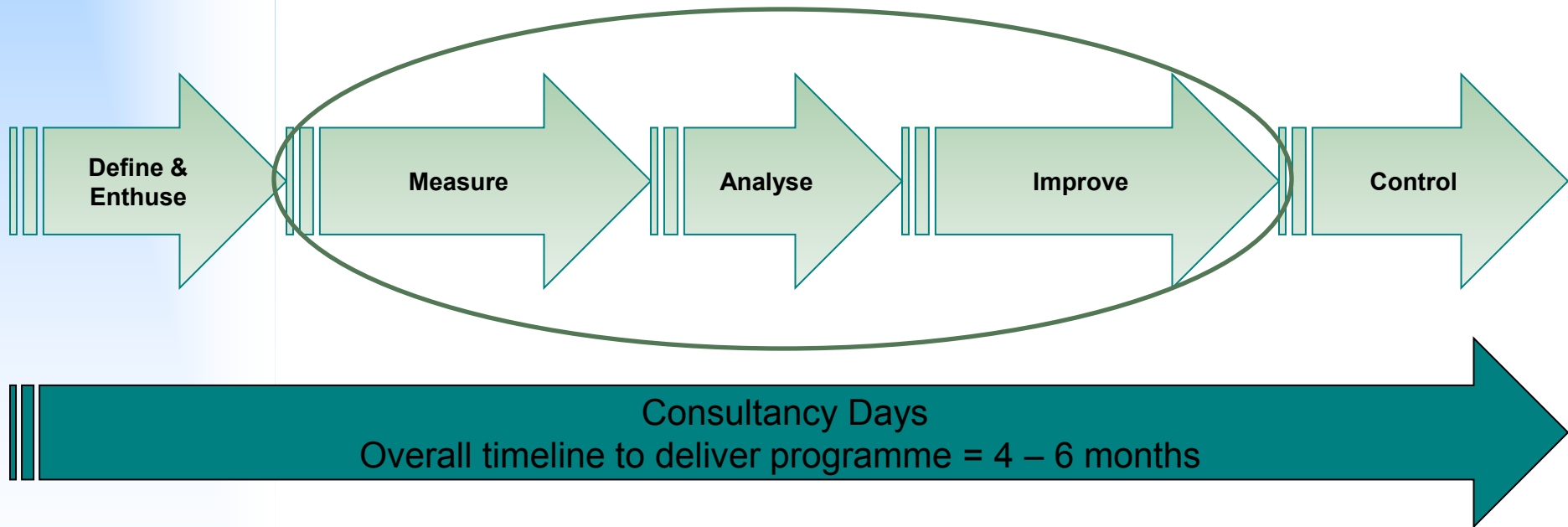
Customer Satisfaction Score



Summary

- This programme is about Adding Value by:
 - Reducing waste
 - Increasing customer satisfaction
- After a century of theory CWC has developed a methodology for the construction industry
- There are six stages
 - Define Enthuse Measure Analyses Improve Control
- The whole process will take up to six months
- A group of key people will need to drive this

How long does this all take?



Current State

Programme

- Programme scope & value.
- Number of contractors & sub-contractors/suppliers & value of work.
- Procurement process and selection criteria.
- Contract arrangements – form of contract, improvement incentives and cost transparency.
- Degree of collaborative leadership and team behaviour.
- Organisation structure and staff numbers.
- Adequacy of management controls
- Benchmarking and performance measurement data collected to date.
- Process improvement activities undertaken to date

Project Management & Governance

Project Management & Governance

- Set up a Steering Group to drive the programme
- Include all relevant stakeholders and contractors
- Develop a plan:
 - Set context / vision for the programme
 - Sign-off target areas for improvement
 - Oversee progress and deliverables through-out
 - Ensure sufficient commitment and support
 - Remove any 'barriers to success'
 - Support the roll-out of improvements
 - Champion a programme of continuous improvement

Core Improvement Team (CIT)

- Multi-Discipline
- Multi-Organisation
- Full-time as part of the CIT
- Establish a team that will 'own' and drive an improvement 'programme'
- CWC Lean Sigma will provide and grow;
 - a structured approach, the 'know-how', challenge, and guidance
- It is up to RHL and the CIT to;
 - support, adopt, grow and flourish