

A LEAN Toolkit for Highway Services

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Comments and Feedback

The HMEP Programme Board would welcome any comments and feedback on this Toolkit, so that it may be reviewed, improved and refined to give the sector the best support possible. If you wish to make a comment, please send an email to highwaysefficiency@dft.gsi.gov.uk with the header, 'Feedback on the HMEP LEAN Toolkit for Highway Services'.

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This report is supported by the following organisations:



FOREWORD

ABOUT THE HIGHWAYS MAINTENANCE EFFICIENCY PROGRAMME

The Highways Maintenance Efficiency Programme (HMEP) is a sector-led transformation initiative that will maximise returns from investment and deliver efficiencies in highway maintenance services. The Programme started in April 2011 with sponsorship from the Department for Transport and is intended to run until 2018.

The Programme is offering local highway practitioners benefits from different ways of working. The vision is that, over time, those involved in highways maintenance delivery, the local authorities as clients and their service providers, be they from the private or public sector, will adopt an ambitious and longer-term approach to enable them to:

- Continuously find new and improved ways of delivering services to highway users and managing highways assets.
- Make use of collaborative partnerships to improve processes and outcomes.
- Deliver a sustainable balance between meeting the needs of highways users, improving quality and minimising costs.

The overall programme has been developed by the Programme Board through key personnel who support HMEP's development. This will ensure that:

- The Programme is truly being driven by what the whole sector needs and wants ('by the sector for the sector').
- The solutions identified by the sector are relevant, realistic, repeatable, scalable and sustainable.
- HMEP is benefits-led, driving true transformation of the sector with tangible efficiency gains and a lasting legacy.

As a transformation initiative, HMEP is targeting the ways that Local Highway Authorities conduct their business. It invites the sector to adopt new ways of working to deliver efficiency savings through:

- **Collaboration & Change** – looking at how alliances between authorities, and clients and their providers, can be formed to deliver efficiencies in the delivery of highway maintenance services. Other projects are looking at changing business processes and culture, for instance by applying LEAN thinking to the processes behind service delivery and how services can be streamlined to realise efficiencies.
- **Procurement, Contracting and Standardisation** – advising on the routes to procurement enabling authorities to determine how their current service is aligned to current thinking and which is the best procurement option to realise their future service ambitions. It also provides the tools so that efficiencies can arise through

the use of, for instance, a standardised form of contract and highway maintenance specification which is better aligned to the activities that Local Highway Authorities undertake.

- **Asset Management** – by providing advice to the sector in the form of updated asset management guidance; for both a simplistic and, where appropriate, more complex life-cycle planning tool to determine whole-life asset costs, thus moving away from a reactive to a longer-term approach for maintaining highways assets; also to provide training specifically targeted at practitioners to help them move towards an asset management approach and to adopt the new HMEP guidance and tools.
- **Benchmarking & Performance** – collecting, sharing and comparing performance data on customer/quality/cost to show how effective Local Highway Authorities are both in delivering value-for-money services and in driving targeted efficiencies.

Products and tools are being developed for each of these themes and are being designed to be independent, but complementary, so that authorities can maximise their returns on their investments.

ABOUT THIS TOOLKIT

Applying LEAN methodology to highway services is still relatively new to the sector. Where LEAN has been used, it has generally been applied to traditional process activities such as reactive maintenance with only limited examples of a more radical wholesale application to the wider service. LEAN is seen by HMEP as a key point of entry to the Programme, offering examination of the existing working practices. The re-design of the service that results from applying LEAN will both better meet the needs of the customer and focus on what is essential to maximise service delivery i.e. *The Pound on the Ground*.

The LEAN Toolkit is part of the collaboration theme. The application of LEAN methodology can aid transformational change when applied to working practices with increased efficiency and effectiveness. It works by involving those within service delivery teams to re-evaluate the benefit they bring through their work, leading to a re-design of working practices with a focus on service improvement at the lowest cost. If LEAN is new to you and you are concerned that you do not have the knowledge of how to apply it to a highway service, this Toolkit guides you through the necessary processes for applying LEAN for the first time and offers case study examples in Annex 1 to illustrate the application of the methodology elsewhere. Each case study has the contact details of the person who can tell you more about how they re-designed their practices and the benefits they gained from the process. For some, this also led to more ambitious application of LEAN to a particular service area or the service as a whole.

This Toolkit fits harmoniously with the other products within this theme, including the Local Highway Authorities Collaborative Alliance Toolkit, Shared Services Toolkit and Creating the Culture Toolkit, enabling authorities to maximise potential savings through a collaborative approach both inwardly and outwardly. This is an important consideration for clients that have

'thin' service structures – particularly as different service areas within the same authority and neighbouring authorities share many of the same challenges and problems. You can always achieve more and improve your service by working together to a common goal.

There is an untapped potential within local highway authorities to achieve efficiency savings through LEAN applications. Evidence from the sector demonstrates LEAN returns on investment and cost avoidance in the range of 10:1 to 20:1. With increasing challenge from government to improve service delivery with reduced budgets, LEAN is seen as one of the approaches that can have the greatest impact. The case study examples within the Toolkit offer a starting point to transform your highway service. You may find that you also need to invest in building client skills or identify service priorities through a strategic review of the service, details of which can be found on the HMEP website. In combination, these products, guidance and practices will lead to the transformational change desired by HMEP to better meet customer needs to a good quality at a lower cost.

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1. WHAT IS LEAN AND WHY USE IT?

Essex County Council:

"At Essex County Council we have used LEAN to improve customer experience by re-designing end to end processes starting at the first point of contact through to delivery on the ground. This resulted in shorter delivery timescales, improved feedback to the customer and reduced waste by simplifying process and the need for re-work. The same principles were applied to our organisational structure where savings were made by reducing duplication and overlap between client and service provider".

- 1.1 There is a lack of clarity about 'LEAN', with people having varied views on what constitutes 'LEAN'. This Toolkit uses the following definition with the intent of aiding conversation and learning between Local Authorities and their partners.
- 1.2 LEAN is a methodology that allows an organisation to view and understand its' operations through the eyes of its customers with the purpose of the systematic and continual removal of activity that doesn't create value for its customers. The outcome of a LEAN project is a better customer experience and a reduced cost.
- 1.3 At its heart LEAN is a method of producing what a customer wants, when they want it, with a minimum of waste and to a high quality. LEAN is not simply about reducing costs, it is genuinely about doing more for less. The improvement of customer service and the increased ownership and pride in their work experienced by staff is as important a measure of the success of a LEAN project as is the saving of money.
- 1.4 LEAN can be applied at any level within a service, to a system such as Reactive Maintenance, to a process such as Safety Inspections or indeed to the whole Highways Service. While LEAN can be applied to solve a specific problem it is best used to improve the performance of an end-to-end system i.e. a system or process that comprises a series of activities that together are intended to deliver an outcome or purpose for the customers of the system. Safety Inspections, for instance, comprise a series of activities designed to identify defects which compromise road users being able to safely and reliably use the network.

- 1.5 The Local Authority Highways Services that have successfully run LEAN projects have achieved savings in the range £150,000 to £1m per year, and have achieved returns of 10:1 with the return often achieved within a year of the investment.
- 1.6 Highlights from some of the case studies researched for this Toolkit are shared here, with many more detailed case studies available in Annex 1 – Case Studies. These case studies demonstrate how highways authorities have used LEAN to tackle some of the challenges currently facing them in:
 - **Budget Cuts** – The state of the economy and reduced support from government mean that Local Authorities have to do more with less. A LEAN review can deliver this.
 - **Pound on the ground** – There is a need to maximise spend on outcomes on the ground and to review services to ensure that as much waste as possible is eradicated (a principle of LEAN), to get the most from limited resources.
 - **Collaboration** – There is pressure to work with partners across the industry and with neighbouring Authorities to break down silos and to deliver services that are coordinated and efficient. While this seems like common sense, it can be hard to deliver in practice and the HMEP LEAN Toolkit provides an approach to tackle this. Many Authorities have thin client structures but this should not be a barrier to improvement and collaboration with other Authorities can help to address this.
 - **Customer expectations** – Customers, and the Members that represent their interests, expect more from Councils than ever before. LEAN improves service from the perspective of the customer and so will improve customer outcomes and satisfaction.

Sandwell Metropolitan Council:

“It is vital that we use every penny in our budget to the best effect. The Highways Programme has helped us understand where savings can be made whilst also improving the road network for our residents”.

CASE STUDY – SANDWELL METROPOLITAN BOROUGH COUNCIL**A HEDGE TO HEDGE, RIGHT FIRST TIME APPROACH**

This project shows how LEAN can be used to deliver dramatic results that are owned by the managers and teams.

Sandwell brought together Senior Officers, Members and front line teams and set them the task of improving the quality of the service that they delivered, with the scope of the project being from hedge to hedge i.e. to do everything needed within the highway boundary. Prior to undertaking the project Sandwell had already reduced their workforce by 30%.

The project team used LEAN to look at all aspects of the service from Customer contact through to permanent fix, then created a clear customer purpose ‘to provide a safe and available road network’. This was used to challenge what worked well and what got in the way in the current system design. The team then applied LEAN to design a new way of working that focused on making it easy for customers to contact them, focused on operatives doing work right first time and made the most efficient use of multi-skilled neighbourhood teams working from hedge to hedge.

Highlights of the benefits delivered by the project include:

- Cost savings of £500,000 per annum.
- Working on a right first time principle, only one visit is now required to fix a defect as opposed to the 2-3 visits needed previously. Productivity per crew has at least doubled.
- Behaviour has changed – the crews were engaged and felt valued as they were able to suggest changes to the way that work was done.
- Customer experience improved as the Call Centre was better integrated with the rest of the service – customer satisfaction is now up to 93%.

CASE STUDY – HIGHWAYS AGENCY NORTH AND HUMBER AREA TEAM**INTRODUCTION OF VISUAL MANAGEMENT AND COLLABORATIVE PLANNING TOOLS**

This project shows how LEAN can help teams to better plan and deliver work using Collaborative Planning and Visual Management.

A-One+ manages the network on behalf of the Highways Agency under a MAC (Managing Agent Contractor) contract. It was recognised that there was an opportunity to further improve the certainty of scheme delivery to programme and to reduce the cost of design across the portfolio.

A LEAN project team was created to include managers and representatives of all of the teams involved in a project. The LEAN team reviewed how work was done today and learned that schemes were delivered month to month with 56% reliability. They also identified opportunities to improve the design of work across all stages.

The new work design created by the team centered on the use of collaborative planning and visual management. Collaborative Planning meetings were introduced for each individual design team (45 minutes each) to carry out the **Plan-Do-Check-Act** cycle. To ensure transparency of the delivery process, Visual Management was introduced in the form of magnetic whiteboards to manage the process. The responsibility for each stage and the key information for the stage was shown on the whiteboard. With the aid of a red (not on target) and green (on target or better) magnet everyone can see how a scheme was performing.

Highlights of the benefits delivered by the project include:

- Scheme delivery adherence improved from 56% to 89%.
- Planned design cost saving of £696,308.
- Weekly reliability of task completion increased from 63% to 74%.

CASE STUDY – LONDON BOROUGH OF ISLINGTON

CREATING A CUSTOMER FOCUSED CULTURE

This project shows how LEAN can help teams to embed a new culture, and how being customer focused can both improve the experience of customers, save money and improve staff morale.

Islington said “We decided to do this because it was the right thing to do”. We wanted to change the culture and get efficiencies so we focused on customers and what matters to them. What we have learned is that LEAN isn’t something different to the day job, it’s about doing the right thing for our customers every day. We now think differently, we fix our streets to improve health, to reduce crime and to make them easier to clean not just so that we have fixed streets. This aligns with customer priorities and helps with Member support. We are now seen by our customers as helpful.

Taking this perspective means we respond very differently to service requests from the public – calls go straight to the crews and they just go and fix the defect, there is no pre-inspection and we can fix 70% of reported defects in this way. Even if the defect does not meet our intervention criteria we still fix it, as it cuts out all of the waste involved in complaints and follow up activity, and delivers what matters for our customers. When we ran a project in a particular road we did all of the street furniture, whether we owned it or not, as we wanted to achieve the maximum impact from our time on the ground. We held a street party with a ‘paint the gate’ session – we bought the paint and the whole street got painting, seeing their house values increase in the process and as a result becoming ambassadors for the council.

Highlights of the benefits delivered by the project include:

- The cost of insurance settlements has been reduced from £500,000 to less than £10,000 per annum, over recent years.
- Value for money delivered throughout the service, with a 30% saving.
- Productivity has increased 4 fold.
- £300,000 of income being received as service is delivered by third parties.
- Morale has improved – A staff member says “I’ve been in this game for 30 years and it’s only recently that I have enjoyed coming to work – now people thank me and it lifts your day”.

CASE STUDY – NOTTINGHAMSHIRE COUNTY COUNCIL

WHOLE HIGHWAYS SERVICE REVIEW

This project shows how LEAN can be applied to any part of the Highway Service.

The scope of our LEAN programme was to examine our whole service. The background was that we needed to save money, our politicians felt that we were not sufficiently customer responsive and we took too long to get our programmes of work on the ground.

In understanding how well the current system worked we found that much more was learned by spending time actually observing the work being done, not just sitting in a room talking about it. What appeared ‘world class’ when we just talked about it was very different when we observed it on the ground.

A new operating model with new structures and processes was created. This included:

- A separate programme management function in the design team which is focused on delivering the annual programme, speeding up project delivery.
- A District Manager role which is the key customer interface.
- Improved project control process that ensures that there is clarity established early in the project and a single Project Manager owning the project to completion.
- A streamlined TRO (Traffic Regulation Orders) process that has increased the capacity to undertake work.

Highlights of the benefits delivered by the project include:

- The programme of works is now delivered on time.
- Customer engagement has been improved.
- We have saved money and improved service, for example in street lighting we went from an average 12 day turnaround in January 2013 to 6 days in July 2013.
- TRO capacity has increased – In the previous year 75% of those planned were

delivered. In the year following the new design being implemented 120% of those planned were delivered i.e. some reserve projects were delivered.

CASE STUDY – LEICESTER CITY COUNCIL

USING THE HMEP LEAN TOOLKIT

This project shows how LEAN can be applied by using the HMEP LEAN Toolkit. The LEAN project at Leicester City was one of three pilots, where they used the Toolkit to guide their LEAN project. The benefits of the pilots have been:

- Demonstrating the results that can be achieved using the Toolkit.
- Testing the Toolkit with learning fed back into refining and improving the text.
- Lessons learned from pilots, as well as other case studies, have fed into the Lessons Learned in section 13 to help users of the Toolkit avoid common pitfalls and issues.

The scope of the project was Reactive Maintenance and the Council put together a project team that was representative of all parts of the service, including Managers, Inspectors and Front Line Crews. The project has been led by Council Managers with critical friend support provided by Habanero Business Consulting in their role as LEAN experts to HMEP.

The team used the LEAN Toolkit to understand how well the current service worked today, and to identify opportunities for improvement. One of the most significant things learned was that crews were re-visiting the same area multiple times to repair individual defects, despite all of the defects being visible on the initial visit but not meeting intervention criteria at that time. By following the Toolkit the project team designed a more efficient way of working that is owned by the team and have tested their new design process in 2 wards. Examples of the new design process include; customer enquiries are now sent straight to the smart phones of the Inspectors, speeding up response times; we now fix all defects in the area thus avoiding multiple visits and customers experience a more common sense approach from us; combination of NRSWA and Safety Inspections as they are working in the same streets.

Highlights from the project include:

- The Toolkit can be used to support a LEAN project.
- There has been a 50% increase in the area of carriageway repaired while the cost has only increased by 8%.
- Staff morale has improved as we are now listening to their ideas on how best to do the work.
- NRSWA inspection rate has increased from less than 10% to 100% - It is estimated that this will save the Council £70,000 as defect repairs will be undertaken by the Utility companies rather than by the Council.

Highway condition surveys which used to be done externally at a cost to the Council are now being done by the Highways Inspectors.

Leicester City Council:

"We suspected that doing the minimum was not cost effective as we were invariably revisiting sections of highway every few months to repair defects adjacent to a previous repair".

2. PURPOSE

- 2.1 The purpose of this Toolkit is to provide simple and practical guidance to enable Highway Authorities to run successful LEAN improvement projects across their Highways Services.
- 2.2 In addition to delivering improvements to service and reductions in cost, a successful LEAN project will result in the authority thinking differently about the design and delivery of work. This outcome significantly contributes to the continual improvement of service after the completion of the project.
- 2.3 The methodology described in this Toolkit brings together elements of a number of LEAN methods. The selection is based on that which is known to work to improve Highways Services. The methods from which elements have been drawn include LEAN Systems Thinking, Six-Sigma and the more people focussed change activities that originate in Human Resources Organisation Development. See 'Operate & Continually Improve Key Activity 3' (p107) for further reading to understand LEAN in more depth.

3. INTENDED USERS OF THIS TOOLKIT

- 3.1 This Toolkit is intended for use by Operational Leaders (this is the day to day project leader - see section 5.4 for a full definition of this role and the other key members of the LEAN team) and their Teams. While internal consultants will be able to benefit from using this Toolkit it is not intended that leaders need any consultancy experience to be able to use the Toolkit.
- 3.2 A key principle of LEAN is that for improvement to be sustainable it must be owned and in the most part undertaken by the managers and teams that work in the systems being improved. It is they who best understand the system and, through the Operational Leader, have the necessary authority to change the system. Underpinning this principle is the psychology that 'people believe in that which they create' or in lay-mans terms a consultant can design the best system or process in the world but the people who do the work will continue to work in the way that makes sense to them. If they do not own it and do not apply it all the effort will be wasted.
- 3.3 The value that this Toolkit brings is a rigorous method for achieving improvement that can be owned by the people who lead and operate the system on a day-to-day basis.

4. WHAT SUPPORT WILL BE NEEDED TO USE THE TOOLKIT?

4.1 The necessary support needs to be identified before starting the LEAN project. There are a range of options available depending on the size and complexity of the project being tackled, as well as on the level of LEAN experience already existing in the organisation. The options are:

- **Option 1 – Go it alone**

This is only recommended for the very simplest of projects or for experienced LEAN leaders. The experience highlighted throughout the case studies and pilots is that the leaders found that, with peer review, their existing views were challenged and changed. If no external perspective or challenge is in place the organisation can only fix what it already believes is the problem, and so limits the outcomes achieved.

- **Option 2 – Light Critical Friend Support**

This is recommended for straightforward LEAN projects and for experienced leaders. On all the case studies there are contact details for leaders who have applied LEAN and who are happy to provide critical friend support and peer review. It is anticipated that this would be light support to a level agreed between the parties. The support could include some visits, e.g. early in the Discovery Stage to challenge the data set, and ongoing telephone support.

- **Option 3 – Expert/ Consultancy Support**

This is recommended for more complex LEAN projects that might be large, high impact, where there is low internal LEAN experience or capacity, or where there are known issues e.g. key stakeholders that are not currently supportive of the change. It is expected that this would involve more support, to be agreed between the Authority and the LEAN consultant that they choose to use. The support could involve bringing experience of similar change programmes, external challenge and leadership support but should not mean leading the project in place of the leaders from the Authority or outcomes will not be sustained.

4.2 The following questions will help to explore readiness for change and to assess which is the right support option:

- Is the system fully understood from a customer perspective or might there be further issues to uncover with some external challenge?
- Does the Authority want to find issues that they might not yet be aware of or blinkered to?
- Does the scope cover more than one area/team/resources outside of your control/collaboration?

- Is there pressure to achieve challenging outcomes from this work?
- Have the leaders led LEAN interventions before?
- How difficult will this project be?
- Are there key stakeholders who are not currently supportive of this change?
- Is there strong support right from the top of the organisation?
- Do the leaders have the capacity to lead this work?

4.3 Once the support option that will deliver the best outcomes has been agreed, then any support considered necessary needs to be put in place ready to start on the LEAN project.

HOW THE TOOLKIT DOCUMENT SHOULD BE USED TO SUPPORT THE LEAN REVIEW

4.4 For the Operational Leader:

This Toolkit is intended to be used at each point of the LEAN improvement project, providing a reference that guides through the tasks that need to be undertaken with links to templates, examples and tools where helpful. Reading this Toolkit from start to finish will describe the whole HMEP LEAN project lifecycle so you can plan the full project. However, a more detailed analysis of each stage is recommended for detailed planning prior to starting each stage.

4.5 For other key stakeholders:

Appendix 7 ‘Communicating the LEAN approach’ can be used to give key stakeholders an overview of the potential benefits of this approach, the LEAN principles and lifecycle and what needs to be done to make it a success. This Appendix can be read by stakeholders as an alternative to working through all the detail of the full guide.

5. HMEP LEAN PROJECT LIFECYCLE

- 5.1 This section introduces the overall LEAN project lifecycle. To support this introduction there are descriptions of the typical roles in a LEAN project, the underpinning principles of LEAN and some indicators of timescale for each project stage. The timescale is materially dependent on the complexity of the project that is being undertaken and the amount of time that can be committed to it, but this range of timescales will allow sense checking of the project plans and progress through those plans.
- 5.2 LEAN is a change methodology and while change is not wholly linear, with some activities being iterative, as with any project, a LEAN project does benefit from a clear lifecycle of stages. The following diagram introduces the HMEP LEAN project lifecycle for use in Highway Services projects.

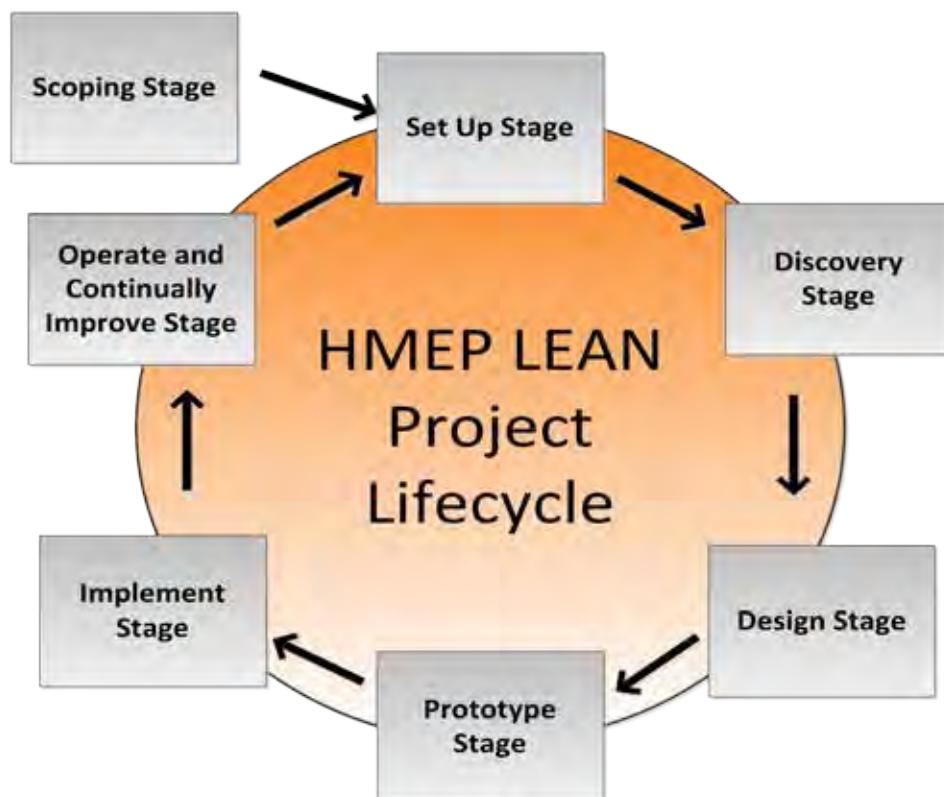


Figure 1 – The HMEP LEAN Project Lifecycle

THE HMEP LEAN PROJECT LIFECYCLE STAGES

- 5.3 The HMEP LEAN Project Lifecycle Stages are described in the following table. The timescale ranges noted are indicative and are a guide to how long it is likely to take to run at one end a simple project with a limited scope e.g improve the operation of the inspection process. A more complex or ambitious LEAN project would require more time e.g. end-to-end delivery of a planned maintenance project. The timescales noted assume that adequate resources are available to the project.

| Stage | Purpose | Timescale Range |
|-----------------------------|---|-----------------|
| Scoping See section 6 | To understand at a high level the scope of the system that will be addressed in the project, the most significant opportunities that exist in the system, and the key challenges that will need to be overcome to improve the system. This stage is not always necessary as it depends upon whether there is a need to better understand the scale of the opportunity before committing to the project. | 1 to 2 weeks |
| Set Up See section 7 | To clearly define the purpose of the project, what success is and how it will be measured, how the project will be run and the roles and responsibilities of the key stakeholders. Key to the success of this stage is clarity of understanding by all key stakeholders of both the purpose of the project and the role that they will need to play to make it a success, including the requisite time commitment. | 1 to 2 weeks |
| Discovery See section 8 | Here, leaders and teams will collectively build a shared understanding of their current system, both the 'what' and 'why' of the way that work is done and how capable it is to do what matters for its customers. During this stage leaders and teams are facilitated to have a live experience, out in the work, of what it would be like to be a customer of the system and to thus build sufficient dissatisfaction with the system today to overcome the natural resistance to change that inhibits most people from moving from the status quo. | 2 to 4 weeks |
| Design See section 9 | To collectively build a shared design for the new system and to agree how to start to experiment with that new design. | 1 to 2 days |
| Prototype See section 10 | To collectively experiment with the new system design, to measure the success of the experiment and to reflect and learn from those experiments feeding improvements into the next iteration of the new system design. The iterations of the experiment are continued until the leaders and teams are confident that the new system design works, at which point a plan is developed to | 2 to 6 weeks |

| Stage | Purpose | Timescale Range |
|---|--|--|
| | implement and make normal the new system design. A key part of the experiment is for the leaders to understand the resource implications of implementing the new system design, and to plan how to manage those implications. | |
| Implement See section 11 | To implement the new system and to embed the measurement regime that will ensure that the performance of the system is continually challenged and improved. Included in this stage is the implementation of any changes to roles, structures and Information & Communication Technologies (ICT). | Dependent on scale of role change and ICT support required |
| Operate and continually improve See section 12 | To embed the operation of the new system and for leaders to ensure that effective measurement, learning and improvement continue. | On-going |

Table 1 – HMEP LEAN Project Lifecycle Stages

KEY ROLES IN A LEAN PROJECT

- 5.4 These are the key roles within the team that perform different functions in a LEAN project. Some of these roles are mandatory and others are optional but still create value for a LEAN project. Details of these roles and responsibilities are below:

| Role | Mandatory or Optional | Key Responsibilities |
|--------------------|-----------------------|---|
| Strategic Leader | Mandatory | <p>The Strategic Leader will provide a constancy of strategic direction for the project, remove any barriers that are brought to them by the Operational Leader and Team, and act as a champion for the improvement with their peers.</p> <p>The Strategic Leader must have authority over the system being improved.</p> <p>Depending on the scope of the project the Strategic Leader is likely to be an Assistant or Executive Director.</p> |
| Operational Leader | Mandatory | <p>The Operational Leader provides day-to-day leadership to the team and in particular:</p> <ul style="list-style-type: none"> • Challenges the team to create a LEAN system by deploying the HMEP LEAN Toolkit. • Understands the system using data - not opinion or assumption. • Removes barriers that are within their scope and escalates those that are not. |

| Role | Mandatory or Optional | Key Responsibilities |
|------------------|-----------------------|--|
| | | <ul style="list-style-type: none"> · Provides a constancy of direction for the project. · Champions the project. <p>The Operational Leader must have operational authority over the system being improved.</p> <p>Depending on the scope of the project the Operational Leader is likely to be a Team or Service Manager.</p> <p>The importance of the strong and unwavering support of the Strategic and Operational Leaders cannot be over emphasised. Most change projects will at some time experience difficulties – it may be with people or policy or competing demands for time. When this happens it is the job of the Leaders to solve problems so that the Operational Team can create the best system possible.</p> |
| Operational Team | Mandatory | <p>The Operational Team should be open minded to learning how the system really works and will create the most effective LEAN system possible with guidance from the Operational Leader.</p> <p>The Operational Team must have within it representatives from each of the functions within the end-to-end scope of the project.</p> |
| Critical Friend | Mandatory | <p>The Critical Friend provides a constancy of challenge and support to the leaders and team. The purpose is to ensure that opportunities are systematically identified and solutions designed and implemented.</p> <p>The Critical Friend must be experienced at undertaking LEAN projects in the Highway Services Sector.</p> <p>The Critical Friend could be from another Local Authority, from another Public Body or from a Third Party provider. See the pool of peer support within the case studies or enquire at the HMEP website. http://www.dft.gov.uk/hmep/</p> |
| Expert | Optional | <p>The Expert (most likely an internal or external consultant) would facilitate and support the leaders and teams to first understand their system from the perspective of their customers and to then design and implement the most effective LEAN system possible.</p> |

Table 2 – Key roles in a LEAN project

KEY LEAN PRINCIPLES

- 5.5 In the context of the HMEP LEAN method, a system is the combination of people, policies, procedures and equipment (including ICT) that are brought together to deliver a purpose.
- 5.6 The HMEP LEAN method can be applied to a wide range of situations, from solving specific problems in a system, e.g. our TROs (traffic regulation orders) are taking too long, to fundamentally transforming the service. Therefore, whilst the method remains constant, the scale, complexity and timescale are flexed to best suit the project or problem in hand.
- 5.7 The following key LEAN principles should be used to guide everything that is done in a LEAN project. It is not expected that these will be learned by rote but used as an 'aide memoir', as part of creating 'Intelligent Client Capability'.

| Principle | Description |
|---|--|
| Treat the system | Whatever the scale of the project or the problem being addressed, always design the change activity to ' treat the system '. That is to solve the root cause not the symptoms. |
| Decisions based on data | Decisions should be made on the basis of data and evidence not of opinion or assumptions. It is also necessary to remain objective and learn what really happens not to seek data that only supports the existing view. |
| Take a customer perspective | When understanding or designing systems, do so from the perspective of the customer , seek to stand in the customers' shoes to see the system as they do. This is referred to as taking a 'customer perspective' or as 'outside-in' design. |
| Understand who the customer is and what matters to the customer | Understanding who the customer is, and what matters to the customer is a key early step in the method. Without this understanding systems may be designed that do not best create value for the customers of the system. Value can only be specified by the customer. |
| Articulate the purpose of the system in customer terms | A key early step in understanding the effectiveness of a system, and to designing a new system, is to clearly articulate the purpose of the system in customer terms . This must be created and owned by the leaders and front line teams that work in the system - this ownership stops the purpose being just a set of words. |
| Effective Measurement | When understanding the effectiveness of an existing system or designing a new improved system, always design in effective measurement based on what matters to the customer. A good measure is one that allows the leaders and front line teams to learn how well their system is performing. This is referred to as |

| Principle | Description |
|--|---|
| | 'capability', and can also be used to understand variation in the system and whether a change has achieved the expected improvement. |
| Understand measurement over time | Measurement should always be plotted over an appropriate time period so that underlying trends can be clearly seen, rather than a simple snap-shot which can result in underlying performance being misunderstood. |
| Treat the system 'end-to-end' | To truly maximise the value and minimise the unnecessary costs in a system it is ideal to treat the system 'end-to-end'. That is from the point a project is conceived to when it is fully implemented on the ground, or from when a customer places a demand upon the system until the customer demand has been satisfied. While it is possible to optimise part of a system there is a risk that it may sub-optimize the end-to end system as a whole. Where an Authority works with contractors to deliver their service both client and contractor must change together to achieve the best outcomes. What is absolutely true is that the customer does not care how we design work but only on how well the system works to meet their needs. |
| Understand Demand | <p>When understanding how effective a system is at delivering what matters for its' customers one of the key techniques is to understand the demand that is placed upon the system. This could be demand generated directly by a customer e.g. reporting a street light out, or could be internally generated e.g. condition survey data leading to a resurfacing project. Measuring the volume and frequency of this demand allows design of the capacity that is needed in a system. Demand can be categorised as 'Value' demand, that is demand that the customer wants to place upon the system and 'Failure' or 'Non-value' demand that is demand that the customer does not want to have to make. Seek to understand the cause of the failure demand so that it can be designed out rather than accepting it as normal.</p> <p>The ratio of value to failure demand is a useful measure of the effectiveness of the system and an indicator of how satisfied the customers will be with the service provided. Understanding demand in this way is often much more rounded than using KPI's (Key Performance Indicators) which can be very narrow and not related to outcomes, or satisfaction surveys which can be overly influenced by the most recent events.</p> |
| Understand the flow of work and what creates value | The work done in a system in response to a demand or any other trigger is understood and challenged as to whether it is a 'value' step, that is it creates value for the customer of the system, or is a 'waste' ('non-value') step. As important as understanding 'what' is done, is understanding 'why' it is done. This understanding of the 'what' and the 'why' allows the design |

| Principle | Description |
|-------------------------------|--|
| | <p>a new system that reduces ‘waste’ steps to a minimum.</p> <p>Whilst it is not possible to eliminate all ‘waste’ steps, leaders and teams should constantly challenge the system to remove unnecessary steps and thus get closer to the ‘perfect’ system.</p> |
| Design against ‘value’ demand | <p>When designing a new system, design to best respond to ‘value’ demand and to systematically turn off the causes of ‘failure’ (non-value) demand. Customers should be able to pull service on an as needed basis.</p> |
| Understand variation | <p>Measuring the capability of the system will show that variation is normal. Some of this variation can be designed out but some will be inherent in the nature of the system and the design of the system must be capable of dealing with it. Variation can be present in the volume of demand placed upon the system and in how well the system satisfies each demand. (As individual demands will be of varying complexity).</p> |
| Seek perfection | <p>A key component of the method is effective measurement, but rather counter intuitively not target setting. The method encourages leaders and teams to seek perfection rather than set an arbitrary target.</p> <p>It is not unusual for 100% improvements to be achieved in performance levels, which is not a target that would ever be set as it would be considered unrealistic.</p> |
| Don’t forget the people | <p>Perhaps the most important part of any system is the people. The method ensures that people are not ignored by engaging the leaders and teams that work in the system to design and implement the most LEAN system possible.</p> <p>A failure to engage the people who work in the system would guarantee that the change would fail to be sustained.</p> <p>The HMEP LEAN Toolkit includes a series of models that help to create a culture change by:</p> <ul style="list-style-type: none"> • Designing work systems that engender pride and ownership. • Creating an environment where everybody can contribute their best. • Supporting people through the process of change. |

Table 3 – Key LEAN Principles

LESSONS FROM THE PILOTS AND CASE STUDIES

- 5.8 There are many issues that can impact the success of a LEAN project. In the case studies and in the experiences of the HMEP LEAN pilots, they have brought out the challenges that they faced and how they overcame them, to help someone starting a LEAN project to avoid these pitfalls.
- 5.9 These lessons learned are shared fully in section 13, and some highlights are shown below as areas to be aware of and watch out for as you work through the HMEP LEAN project lifecycle:
- Be really clear up front about the customer, purpose and what matters to customers.
 - Get the right stakeholders involved – include contractors and other partners in the process.
 - Pull support from a critical friend – get external challenge.
 - Be clear about how much time commitment this will involve and be realistic about how hard it will be to free up the time needed.
 - Own the change – the whole team need to design the new way of working so that they believe in it.
 - Build dissatisfaction to overcome resistance to change – good quality, hard evidence is needed to show the waste and to build the case for change.
 - Recognise resistance and tackle it early.
 - High challenge – always challenge thinking whether it is your own or somebody else's.
 - Measures are critical – strong measures will give confidence in the new way of working.
 - Keep improving – continually learn and improve, keep the project momentum up.

- 5.10 Sections 6 to 12 of the Toolkit split the different elements of a LEAN review into separate stages. Each section sets out the detail of how to complete the stage, including the purpose, the key activities and the outcomes:

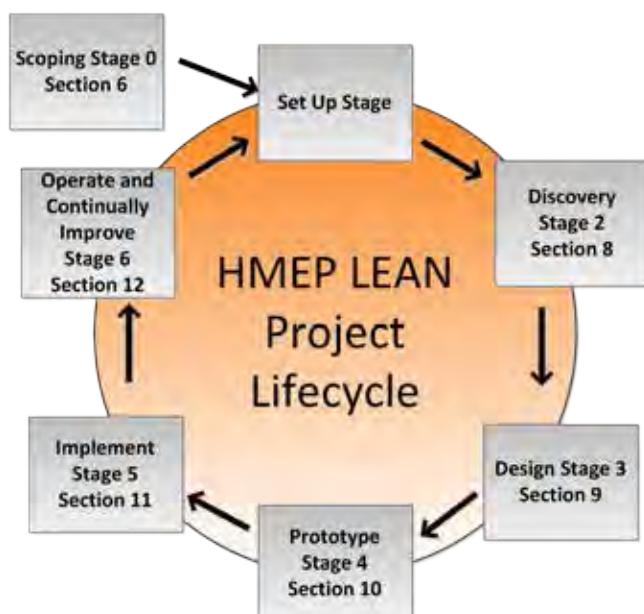


Figure 2 - Where to find the LEAN Stages within the Toolkit

6. STAGE 0 – SCOPING – “HOW TO” GUIDANCE (THIS STAGE IS OPTIONAL)

- 6.1 The purpose of this stage is to get commitment to the project if this is not already in place. The Strategic and Operational Leaders need to understand at a high level:
- The scope of the system that will be addressed in the project.
 - The most significant opportunities that exist in the system.
 - The key challenges that will need to be overcome to improve the system.
- 6.2 This stage is not always necessary as it depends upon whether there is a need to better understand the scale of the opportunity before committing to the project. Where commitment to the project is already in place this stage can be skipped so that the cycle starts at Stage 1 – Set Up.
- 6.3 The Scoping stage will help prepare the leaders for the Set Up and Discovery stages. Gaining buy in at the Set Up Stage will be easier, already having worked with stakeholders. Having gathered data in Scoping will make the Discovery stage progress rapidly as most can be re-used.
- 6.4 Other HMEP products such as the HMEP Strategic Review, Service Review, Asset Management or Benchmarking & Performance could be used as an alternative entry point to Scoping by challenging practice to trigger the launch of a LEAN project. These can be found at <http://www.dft.gov.uk/hmep/>.

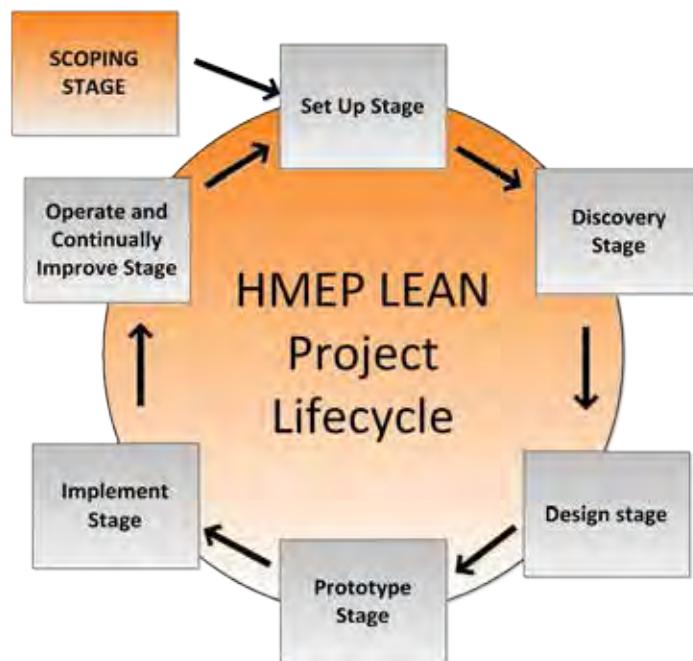


Figure 3 - The Scoping Stage in the HMEP LEAN Project Cycle



Highways Maintenance Efficiency Programme

SCOPING STAGE SUMMARY (Optional)**Purpose:** Get commitment to start**Key activities:**

- Agree purpose of Scoping
- Draw initial system picture with system owner
- Spend time in the work to understand customers, demand and purpose, flow and capability and resources consumed by the system
- Complete System Picture
- Share learning from the Scoping exercise and confirm purpose of Scoping has been met

Key to success:

- Understand the issues and waste
- Understand the size of the opportunity if a decision is taken to go ahead
- Create desire to change

Outcomes & Products:

- A purpose statement for the Scoping
- A first iteration of the System Picture
- Data on demand, flow, capability & resources
- An agreed System Picture
- A decision to go ahead



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6.5 For each of the key activities in the Scoping stage the following elements are outlined:

- Purpose
- Activity Description
- Outcomes & Products
- Tools & Models (where appropriate)

SCOPING KEY ACTIVITY 1: AGREE THE PURPOSE OF SCOPING**PURPOSE**

To be clear about why Scoping is needed.

ACTIVITY DESCRIPTION

The Operational Leader will agree with the Strategic Leader the purpose of undertaking the Scoping exercise. This will normally be to understand the scale of opportunity afforded by a project, to be able to decide to launch.

OUTCOMES AND PRODUCTS

A purpose statement for undertaking the Scoping exercise.

SCOPING KEY ACTIVITY 2: DRAW AN INITIAL SYSTEM PICTURE WITH THE SYSTEM OWNER

PURPOSE

The purpose of the activity is for the Operational Leader to develop a very high level system picture in order that:

- The Operational Leader knows where to follow work in the system.
- The Leaders get a first view of a system picture and what additional knowledge will be added to the picture during Scoping.

ACTIVITY DESCRIPTION

To draw a very high level ‘system’ picture in order to get sufficient understanding of where to follow work in the system. The picture will include:

- Demands and channels of demand and perceived volumes and frequencies.
- The customers who place the demands, or who generated the demand if it is internally generated e.g. from a safety inspection.
- Where the demands are received in the system.
- What work is done (or believed to be done) as a result of receiving the demand
- How is the performance of the system measured today and what might matter to the customer when placing the demand.
- What are the perceived issues in the system.

The Operational Leader will also describe what additional knowledge will be exposed during Scoping to enrich the picture.

OUTCOMES AND PRODUCTS

First iteration of the System Picture.

Tools & Models

The Tools & Models section in Discovery Key Activity 9 shows a detailed systems picture as an example. At the Scoping stage, this would be drawn as a simple flip chart rather than a PowerPoint presentation.

Sandwell Metropolitan Council:

“It's vital that we use every penny in our budget to the best effect. The highways LEAN programme has helped us understand where savings can be made while still improving the road network for our residents”.

SCOPING KEY ACTIVITY 3: SPEND TIME IN THE WORK TO UNDERSTAND CUSTOMERS, DEMAND AND PURPOSE, FLOW AND CAPABILITY AND RESOURCES CONSUMED BY THE SYSTEM

PURPOSE

The Operational Leader collects data that describes the work and why the work flows as it does. The data collected must be ‘real’ and recognisable as such by the people that lead and work in the system.

ACTIVITY DESCRIPTION

The Operational Leader will follow work through the system and will talk to the people doing the work. Key to this task is the principle of ‘show me’ rather than simply ‘tell me’. This ensures a better understanding of what really happens. It is also probable that some sampling of demand will be undertaken (tested with ‘is this typical?’ questions of the team being scoped) and digging up of historic demand and in some instances cases to understand what work was done. The Operational Leader will spend enough time in the work to understand at a high level:

- Who the customers are.
- The type and frequency of demand that they are placing on the system (see the Discovery Stage for a more complete description).
- The volumes of demand and the channels used.
- The flow of work and why it flows that way.
- How well the system delivers what matters to its customers.
- The current measures that are in use and what they tell us about the real performance of the system from the perspective of the customer.
- The key ‘system conditions’ that constrain how the system works.
- The resource (people and other costs) that are consumed in the delivery of the system. It is particularly important to start understanding the cost of doing ‘value’ work and ‘waste/failure’ work.

OUTCOMES AND PRODUCTS

Data on customers, demand, purpose, flow and capability that will be used to create the system picture.

Tools & Models

The following table is a template to help the Operational Leader to make sure that they have covered everything that they need to in the Scoping Stage.

Template to Perform Scoping

The template has been completed with example activities from a Planned Maintenance system.

| Activity | Included in System Picture |
|--|----------------------------|
| Initial Meeting with Highways Management Team to collect data for system picture. | |
| Pick a random sample of relevant projects that have recently completed and map their timeline and work flow. | |
| Find what first triggered the project e.g. condition survey, safety inspection. Go to that team and understand demand, volumes, value and failure ratios, their work steps and any measurement regimes in place. | |
| Follow the process to the next stage e.g. getting project approved and funded. Go to the teams involved at this stage and understand demand, volumes, value and failure ratios, their work steps and any measurement regimes in place. | |
| Follow the process to the next stage e.g. getting the detail of the scheme agreed and planned. Again, understand demand, volumes, their work flow and any measures. | |
| Keep following the process through and questioning each team until the work has been fully completed on the ground. Include any contractors and also support teams e.g. Finance. | |
| Develop stakeholder plan, now that you understand all the teams involved in the end-to-end flow. | |
| Sample test real capability of the system to do what matters for its customers. In this case what matters is likely to be how quickly the scheme is delivered (from when it was first identified as well as the traditional measure from when work | |

| Activity | Included in System Picture |
|--|----------------------------|
| started), is it delivered on time, is it delivered on budget, did it achieve what was needed. Getting these real measures from a sample of cases and showing these in a chart (see Appendix 2, using statistical process control charts) will expose the true performance of the system. | |
| Identify key findings from scoping that tell the story and highlight scale of opportunity for improvement and savings. | |

Table 4 – Template to Perform Scoping**SCOPING KEY ACTIVITY 4: COMPLETE SYSTEM PICTURE**

| |
|---|
| <p>PURPOSE</p> <p>To prepare the system picture and the key messages that will be fed back to the Strategic Lead.</p> |
| <p>ACTIVITY DESCRIPTION</p> <ul style="list-style-type: none"> • Describe how well the system delivers its purpose. • Describe the key issues that impact the performance of the system. • Describe the scale of opportunity that exists to improve the system. • Describe the key areas that require change in order to realise the improvement. • Answer any specific questions that were identified when agreeing the purpose of carrying out a scoping stage. |
| <p>OUTCOMES AND PRODUCTS</p> <p>System Picture.</p> |

Tools & Models

Model System Picture (see Tools & Models in Discovery Key Activity 9).

SCOPING KEY ACTIVITY 5: SHARE LEARNING FROM THE SCOPING EXERCISE AND CONFIRM PURPOSE OF SCOPING HAS BEEN MET

PURPOSE

To share what has been learned about the current operation of the system and the scale of opportunity for improvement, and to decide whether or not to initiate a change project to realise the improvements.

ACTIVITY DESCRIPTION

The Operational Leader will take the Strategic Lead through the system picture and will help them understand the data that has been collected that describes the current operation of the system and the opportunity for improvement. On the completion of this activity the Operational Leader will seek approval from the Strategic Leader to initiate a change project based upon the findings of the scoping stage.

OUTCOMES AND PRODUCTS

Agreed System Picture.
Decision to launch project.

Tools & Models

Model System Picture (see Tools & Models in Discovery Key Activity 9)

Scoping Stage Overview:

Outcomes that will have been delivered in the Scoping Stage are:

- A purpose statement for the Scoping.
- A first iteration of the System Picture.
- Data on demand, flow, capability & resources.
- An agreed System Picture.
- A decision to go ahead.

These will give a view of the opportunities available and allow a decision to be taken to launch the LEAN project.

7. STAGE 1 – SET UP – “HOW TO” GUIDANCE

7.1 The purpose of the stage is:

- To clearly define the purpose of the project.
- To define what success is and how it will be measured.
- To agree how the project will be run.
- To agree the roles and responsibilities of the key stakeholders.

7.2 Key to the success of this stage is that all stakeholders are clear on the purpose of the project and the role that they will need to play to make it a success, including the necessary time commitment. By the end of the Set Up stage you will have completed the Terms of Reference (TOR) and the Project Plan.

7.3 The Set Up stage is critical to prepare the ground for the success of all the further stages. If stakeholders have been fully engaged at this stage and there is clarity about the project then further stages will proceed quickly and without issues. If this has not been done then the project will take longer as issues arise along the way, and can fail if there is not the right buy in. If the Scoping stage has been used much of the stakeholder engagement work and shaping of the project will already be complete and the Set Up stage will be accelerated.

7.4 HMEP products that will be useful at this stage include:

- The ‘Potholes Review’ & ‘Highways Infrastructure Asset Management Guidance’ which demonstrate new ways of working that focus on prevention and include case studies sharing how others have implemented improvements.
- The ‘Creating the Culture to Deliver’ Toolkit which can be used to support the planning and embedding of a new culture and way of working around the LEAN project.
- The Pilot sites (who have been testing the LEAN Toolkit on live projects) have found the HMEP leaflet ‘Highways – Maintaining a vital asset’ useful for engaging Councillors at this stage.
- The ‘Highways Client – Service Provider Toolkit’ describes how clients and service providers can collaborate to deliver and improve the service together.
- The ‘Local Highways authorities Collaborative Alliance Toolkit’ if there is the potential for collaborating with other Authorities in the LEAN project.
- The ‘Shared Services Toolkit for Highways Services’ to consider pooling resource across fellow Highways authorities as part of the review.

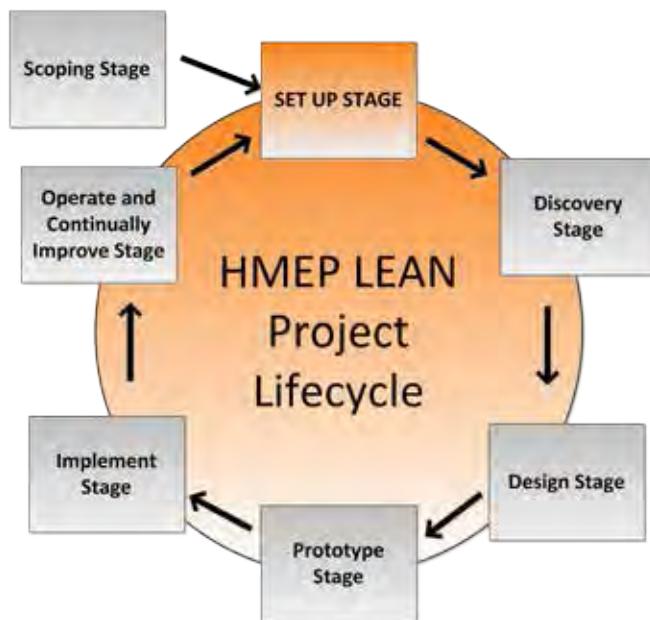


Figure 4 – The Set Up Stage in the HMEP LEAN Project Lifecycle

HMEP
Highways Maintenance Efficiency Programme

SET UP STAGE SUMMARY

Purpose: Be ready to start

Key activities:

- Scope the project with the sponsor
- Connect and ‘contract’ with key stakeholders
- Document Terms of Reference and Plan
- Socialise and agree Terms of Reference and Plan
- Sign-off Terms of Reference and Plan

Key to success:

- Clarity of understanding of purpose
- All stakeholders are clear on what they need to do to make this a success

Outcomes & Products:

- To clearly define the purpose of the project
- To clearly define what success is and how it will be measured
- To agree how the project will be run
- To agree roles and responsibilities of the key stakeholders
- To sign off Terms of Reference and Plan



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7.5 For each of the key activities in the Set Up stage the following elements are outlined:

- Purpose
- Activity Description
- Outcomes & Products
- Tools & Models (where appropriate)

SET UP KEY ACTIVITY 1: SCOPE THE PROJECT WITH THE STRATEGIC LEAD

PURPOSE

To begin the process of articulating the outcomes required of the project, and from that flows the method, roles & responsibilities and plan.

ACTIVITY DESCRIPTION

The Operational Leader will design the project with the Strategic Leader using the following headings. This is a high level, first draft that is iterated in subsequent activities:

- Outcomes required.
- Method by which outcomes will be delivered.
- Roles and responsibilities mapped to key stakeholders.
- Project plan.
- Outline costs and business case (if applicable).

OUTCOMES AND PRODUCTS

First Draft Terms of Reference (TOR) and Plan.

Tools & Models

Stakeholder Management (see Appendix 1)
Model Terms of Reference (see next page)
Model Project Plan (see next page)

Model Terms of Reference

Model Terms of Reference are important to bring clarity and consensus to the LEAN project from the very beginning. It is good management to be clear about outcomes, deliverables, financial impact and timing. Discussion around the outcomes, methods and resources at this early stage of the project will bring out potential issues so that they can be dealt with, rather than causing delays and problems once the project has begun. They also create consensus and commitment across the stakeholders.

ANOTHER COUNCIL

Version History

| Version number | Date issued | Summary of changes |
|-----------------------|--------------------|--|
| 0.1 | 8 October 2013 | Initial draft for discussion |
| 0.2 | 9 October 2013 | Additions from Simon White (Head of Planned Maintenance – Another Council) |
| 0.3 | 22 October 2013 | Additions from Steve Black (Contract Partner) |
| 1.0 | 27 October 2013 | Signed off by Head of Highways – Another Council |

Table 5 - Example Terms of Reference for LEAN Systems Thinking Programme in Highways

OUTCOMES SOUGHT BY THE COUNCIL

The council is seeking the following key outcomes from the programme:

- To improve the effectiveness of the Reactive Maintenance system. (It is currently believed that there is a 50% failure rate on filled potholes).
- To increase the capacity and flexibility of the Reactive Maintenance system.
- To reduce the cost of delivering reactive maintenance across the network.
- To better balance the workloads of the teams, creating a team design that is capable of delivering the work more effectively and efficiently.
- To create a co-operative ‘One Team’ attitude across the Council and Contractor teams.
- To strengthen the relationship between the leaders of the Reactive Maintenance system and the operational staff.

Method

The method is based upon the HMEP LEAN toolkit.

The following diagram describes the steps that will be undertaken and our current view of the likely timescale, which is impacted by the time committed by the appropriate stakeholders, and by what we find in the system:

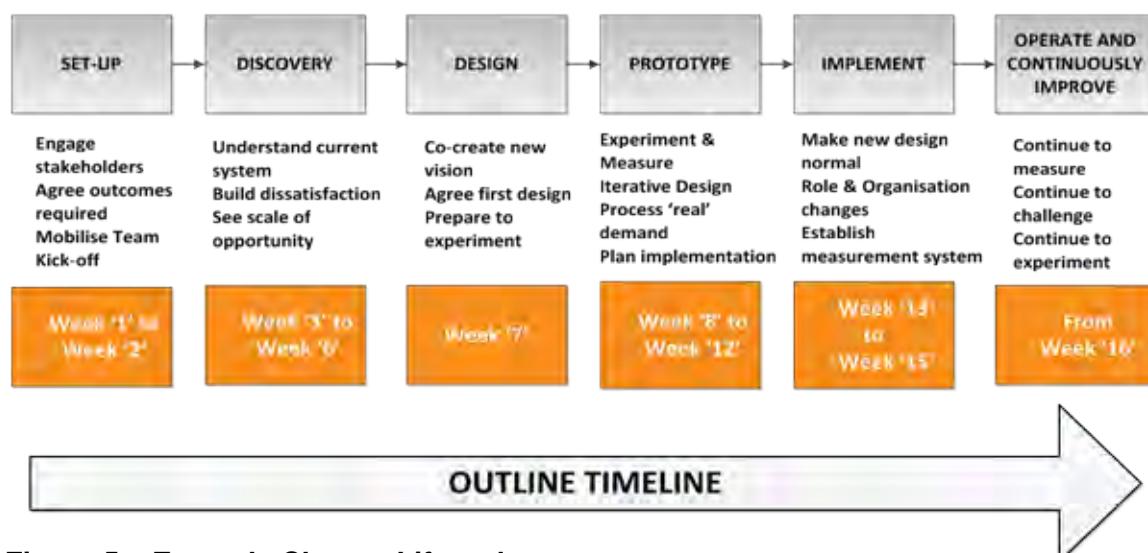


Figure 5 – Example Change Lifecycle

Leaders and staff will be fully engaged in all the intervention phases, from gathering data through redesign to continuous improvement. We believe that change can only be sustained if the people who deliver the service create it, and that leadership is critical for radical change to succeed. This change will develop the skills of the leaders, managers and staff so that they are able to sustain and continue to improve beyond the LEAN project.

In **Set Up** we will understand and build connection with all the leaders in the system. We will get clarity around what will be delivered, how it will be done, who will be involved (leaders and staff), roles and timings to set the LEAN project up cleanly. We will create an outline plan to help communicate and prepare for engagement; this will develop throughout the work.

The **Discovery** stage will build consensus and understanding around the current state of the service. The team will study customer demand, map flows, find customer measures and understand why the current performance of the system looks the way that it does. The Operational Leader will facilitate the group in understanding their customer better – looking at customer purpose and what really matters to customers.

The **Design** stage is usually delivered as an event where all key stakeholders, from end to end of the system come together to create a shared and inspiring vision of the future, and a plan of how that prototype can be tested.

Through the **Prototype** stage the new system design will then be tested in a controlled

and experimental environment, with real customer demand. The impact on customer performance in the experiment will be measured and the team will use this data to keep learning, driving out waste and improving. Leaders will design roles and organisation structures based on the new process, as well as removing any blockages that the team encounters. Leaders will also be looking at the macro redesign that needs to support the experiment – this could include policies, leadership competencies or any other whole-council changes identified

The redesign will be implemented across the whole service to ‘make it normal’ in the ‘**Implement**’ stage. The leaders and front line teams will have learned in their journey to this point how to pay attention to what matters, how to make it safe for people to keep experimenting, how to learn together and thus will create an environment where change is sustained and where people continuously improve the system.

RESOURCING, LOGISTICS AND RESPONSIBILITIES

Key to the method is that learning and change is best done by all of the key people in a system working together. The system belongs to the people who work in it, from political and executive leadership, through operational leaders and to the front line staff. This must include all of the people who together deliver what matters for the customer, which predictably challenges department and team boundaries.

As the operational teams are small it is suggested that everyone is engaged in the programme. The outline design for this is:

- Mark as the Operational Leader spends time with each of the operational teams as they go about their normal work, providing the opportunity to learn together without impacting the delivery of work.
- Mark and the members of the operational teams reflect together and document what has been learned.
- At least once a week the operational team members meet together for an hour with Mark to share what they are learning.
- Each of the operational team members will be encouraged to spend time understanding all parts of the system.

We know that the diaries of senior leaders are very busy, it is therefore suggested that from day 1 an hour a week is scheduled when they come together as a Strategic Leadership Group to reflect on what is being learned and address barriers to progress as they become visible. In addition to this time together the senior leaders will also come out and spend time with the operational teams throughout the change lifecycle.

The Team for Reactive Maintenance is comprised:

Strategic:

- Jamie Black - Executive Director Neighbourhoods.
- Councillor Tom Green – Portfolio Holder Transport.
- Keith Jones – Assistant Director Neighbourhoods.

- Steve Smith – Head of Engineering & Transportation.
- Glyn Brown – Traffic and Transportation Service Manager.
- Mark White – Team Leader.
- Jason Smith – Contractor Contracts Manager.

Operational:

- Mark White.
- Highways Team.
- Street Inspection Team.
- Admin and Technical Team.
- Contractor Team.

Other key stakeholders will be engaged as appropriate and are expected to include:

- Cllr John Smith - Portfolio Holder for Business Support Services.
- Mike Jones – Executive Director Resources.

The responsibility of the Operational Team is:

- To learn together as a team.
- To interact with and learn with the Strategic Leaders, creating a more effective system.
- To understand reactive maintenance as a whole end-to-end system from the perspective of the customer.
- To design a new end-to-end reactive maintenance system that best does what matters for its customers.
- To collectively contribute to the understanding of the current system, and then to the design of the new system.
- To experiment and learn by processing ‘live’ demand through the new system, refining the new design based on the lessons learned.
- To create an environment where measuring what matters, experimenting and learning, and continuing to do the best for the customer becomes normal.

The responsibility of the Strategic Team is:

- To learn together as a team.
- To learn how to provide effective leadership to the whole system.
- To interact with and learn with the operational leaders, creating a more effective leadership community.
- To understand reactive maintenance as a whole end-to-end system from the perspective of the customer.
- To provide a constancy of leadership that demonstrates the strategic level support for the programme, demonstrating this constancy by word and behaviour.

- To remove obstacles that get in the way of the Operational Team, the most common being ‘I am too busy doing something else’.
- To support the operational leaders to create an environment where measuring what matters, experimenting and learning, and continuing to do the best for the customer becomes normal.

The responsibility of the Operational Leader is:

- To provide day to day leadership for the team.
- To provide a constancy of method using the HMEP LEAN Toolkit.
- To facilitate the learning of the strategic and operational leaders, and of their teams
- To facilitate the improvement of the reactive maintenance system by the operational and Strategic Leaders.
- To lead the design of the new roles, pulling appropriate professional support.
- To lead the implementation of the new system, rolling in all staff and all demand.
- This is expected to take 1 day a week of their time.

Initial Cost Benefit Analysis**Expected costs**

- There will be no external costs. This project will be resourced internally - we consider taking on change responsibilities to be part of the day job.
- Expected Benefits.
- We estimate from the data found in Scoping that we will be able to deliver the current outcomes (or better) whilst reducing our bottom line by £200,000 which is needed to meet planned budget cuts.
- This is based on the current estimate of a 50% failure rate on filled potholes, inefficiencies discovered in the process, and evidence that the workload is not efficiently organised across the geography of the Council.
- These are rough estimates based on our early data – we expect these numbers to be developed further through the Discovery stage as we understand the waste in the system and what can be potentially achieved. The numbers will be tested in the Prototype stage to prove what can be delivered with the new way of working. A full cost benefit analysis & economic modelling will be completed at the end of the Discovery stage.

The Model Project Plan

- 7.6 The model project plan brings structure and timing to the whole project. It will show any timing issues and make clear when resource is needed - planning this at the beginning will help the project move forward as quickly as possible. An example Model Project Plan follows.

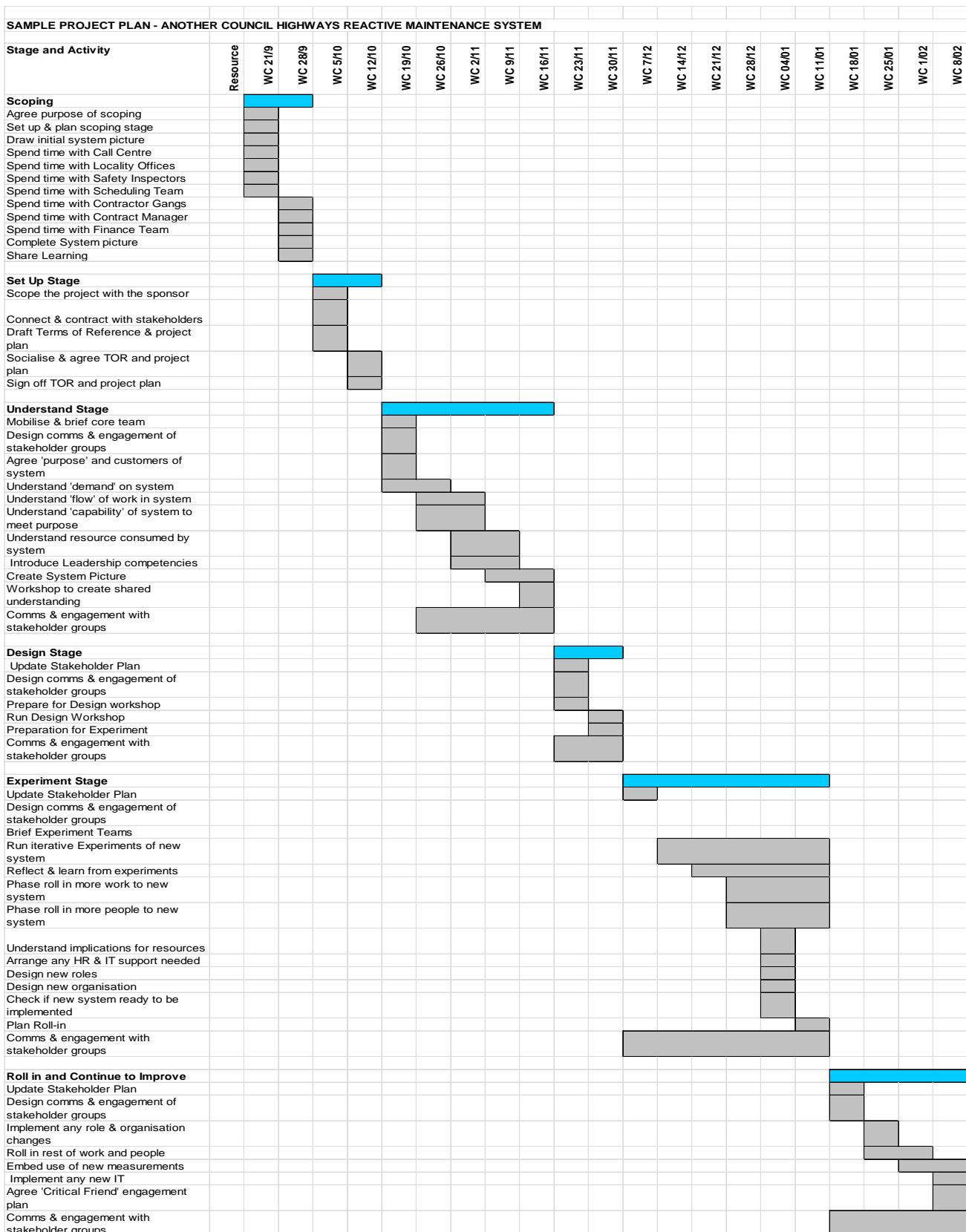


Figure 6 – Example Project Plan

SET UP KEY ACTIVITY 2: CONNECT AND ‘CONTRACT’ WITH KEY STAKEHOLDERS

PURPOSE

The purpose of this activity is for the Operational Leader to develop with the key stakeholders the draft outcomes required, methods to be used, roles and responsibilities and plan created with the Strategic Leader. This co-creation allows all stakeholders to feel ownership of the project and to commit to their role.

ACTIVITY DESCRIPTION

In this activity the Operational Leader will meet with each of the key stakeholders and will:

- Refine with them the outcomes they want from the project.
- Describe the method that will be used to deliver the project.
- Explain the roles and responsibilities of all key stakeholders, particularly what is expected of them and will explore if anybody has been missed. It is at this point that named resources to be engaged in the project would be identified. These resources must be representative of the work area that is in the scope of the project.
- Review the plan and set expectations in line with the plan. That is expectation of when outcomes will be delivered and when resource is required.
- Understand the level of support and commitment of each of the key stakeholders.
- The Operational Leader would keep the Strategic Leader appraised of the developing picture as they understand the positioning of each of the key stakeholders.

OUTCOMES AND PRODUCTS

Information from all stakeholders to allow the next iteration of the Terms of Reference and Plan. This activity also allows the Operational Leader to understand the positioning of stakeholders and to plan how to best keep them engaged.

Tools & Models

- Stakeholder Management (see Appendix 1)
- Model Terms of Reference (see Set Up Key Activity 1)
- Model Project Plan (see Set Up Key Activity 1)
- Model Outcomes (see the following page)

Model Outcomes

- 7.7 Model outcomes help clarify the vision and outcomes that will be achieved from the LEAN project. The Discovery stage of the work will show the waste in the system and the specific outcomes for your Authority will be created in the Design stage. However this is intended to give an advance view of possible Highways-specific outcomes to help get early buy in from stakeholders and to design the project to make sure that the outcomes are achieved. This will help avoid limiting potential outcomes by not including the relevant people in the Set Up phase or by missing key data collection in Discovery.

Model Outcomes example:

These examples highlight the savings that can be taken to reduce budgets or reinvested to deliver more value work. As well as saving money, it is important that the work will also be better quality, faster and give people pride in their work as these outcomes are all tied up together in transforming the whole. It will not work if it is broken down into small elements and each made more efficient without fundamentally challenging how we think and work.

Work more efficiently – save on number / size of gangs

- Prevention not reaction.
- Work in efficient geographic patches rather than chasing around the whole council area to meet an urgent deadline to reduce travel time and cost.
- Right first time – don’t go to a defect twice – have the right materials, equipment and direction to make a quality permanent fix the first time.
- Have the right knowledge to be able to fix the defect i.e. accurate location and details of defect so the gang can go once with the right materials.
- Fix the root cause – don’t keep fixing the symptoms. Where there are broken slabs caused by parking on pavements – change the parking arrangements at that location rather than keeping fixing the same defect.
- Do the right thing for the highway – don’t fix a pothole that is 41mm and leave the one next to it that is 39mm but that will clearly need another trip out to fix it a few weeks later.
- Reduce duplication between many specialist teams working on the same street – work hedge to hedge and take pride in the outcomes.
- Understand what local residents / road users want in different areas so that the system delivers that and only that. If differing local needs are not understood then the design will deliver too much or too little and so waste resource.
- Take out as many steps and barriers as possible between identification of defect and fix. This will speed up the end-to-end time as well as making the process more efficient.
- Engage the public to help. Knock on doors and engage communities in taking pride in their environment.

Save inspectors and supervisors

- Cut out management layers – management becomes being about being close to the work and acting on the system to drive customer improvement.
- Find and fix.
- Combine inspections so that the streets are only walked once e.g. NRSWA, safety inspections etc.
- Combine inspection and supervisor roles so inspectors have a much closer

relationship supporting the gangs and improving the work together.

Save on customer contact resource

- Understand the failure demand in the system (e.g. chasing outstanding work, complaints etc.) and eliminate/ reduce it. This can be as high as 80% of call handling time.
- Ask the right questions up front so that the right information is captured first time and no rework is required later.
- Have the right expertise in answering the call so that mistakes aren't made or opportunities missed to avoid the situation where “if only they had understood the impact and asked the customer X while they were on the phone it would have saved us loads of time later”.

Save back office resource

- Capture all the information that is needed to deliver and measure the work once at the first opportunity.
- Set Up the process & IT so that information flows cleanly from the first contact to the end. Eliminate reworking, re-entry into multiple IT systems and manual processes.
- Watch for handovers between client and contractor or at any other boundary between partners through the flow. These are often areas where incomplete or inaccurate data can cause rework so need attention to eliminate waste.
- Only capture what is absolutely needed to do the work or drive improvement. Anything additional is waste.
- Beware large number of KPIs that are not outcome measures but take up management time in creating and monitoring them. For example, a KPI may measure call volume coming in, but how does that drive improvement? Is an increase in volume good because customers are more aware and reporting more, or bad because failure demand is increasing as customers chase up queries that are slow in being dealt with?
- Make customer measures automated and easy to use so that minimal time is spent creating them for maximum learning.
- Give frontline teams opportunity to be self-managing and responsible for planning and delivering their own work to be more efficient and save back office time.
- Checking and monitoring are waste activities – focus on getting the process right-first-time so that the double-checking around the process can be reduced.

Better integration – save on frontline resource and planned and design teams

- Design new so that it is efficient to maintain.
- Closely link reactive and planned maintenance programmes so that they inform each other.
- Where contractors are in place always look at the end-to-end system together across client and contractor.

Table 6 – Model Outcomes Example

The clear vision should include the following elements:

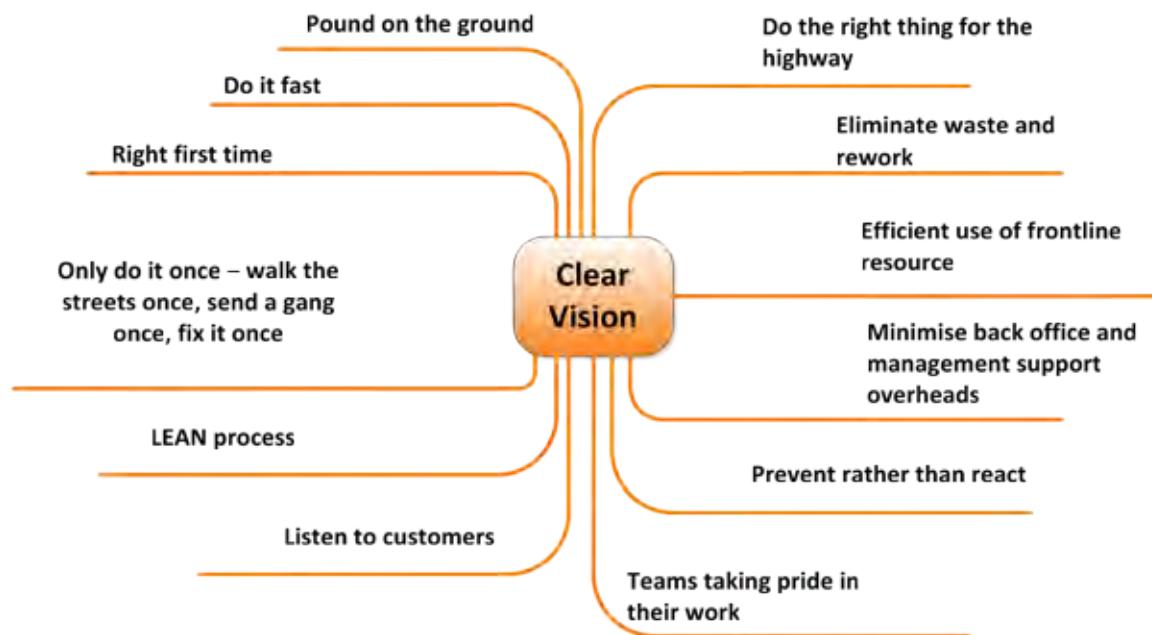


Figure 7 – Contents of an HMEP Clear Vision

- 7.8 This isn't about having the answers before understanding your own system and creating the right answers for your own Authority. If answers are taken from elsewhere, not created by the team themselves, there will not be buy in or change in thinking and any outcomes achieved will not be sustained in the longer term. The purpose of this is to have a vision of where outcomes will be delivered as early as possible to help plan and get buy in for the work.



Sandwell Metropolitan Borough Council; “Look how often we have been back to this section of footway, but have we achieved the right outcome?”

SET UP KEY ACTIVITY 3: DOCUMENT, CIRCULATE AND SIGN OFF TERMS OF REFERENCE (TOR) AND PLAN

PURPOSE

For the Operational Leader to create and get sign off on the Terms of Reference and Plan.

ACTIVITY DESCRIPTION

The Operational Leader will bring together all of the information that has been collected and drafted to document the Terms of Reference and Plan. This draft will then be circulated to stakeholders for revisions that would enable them to be signed off. This step formalises that all key stakeholders are committed to the outcomes of the project, to the roles they are expected to play and to the plan to complete the project. The Terms of Reference and Plan will then be signed off and the LEAN project can begin.

OUTCOMES AND PRODUCTS

Draft Terms of Reference & Plan
Signed off Terms of Reference and Plan

Tools & Models

Stakeholder Management (see Appendix 1)
Model Terms of Reference (see Set Up Key Activity 1)
Model Project Plan (see Set Up Key Activity 1)
Model Outcomes (see Set Up Key Activity 2)

Set Up Stage Overview:

The outcomes that will have been delivered in the Set Up Stage are:

- To clearly define the purpose of the project.
- To clearly define what success is and how it will be measured.
- To agree how the project will be run.
- To agree roles and responsibilities of the key stakeholders.
- To sign off Terms of Reference and Plan.
- Stakeholder understanding and buy in.

This will Set Up what is needed to start the LEAN project cleanly and with the best possible chance of success.

8. STAGE 2 – DISCOVERY – “HOW TO” GUIDANCE

- 8.2 The purpose of the stage is for the leaders and teams to build a shared understanding of their current system, both the ‘what’ and ‘why’ of the way that work is done and how capable it is to do what matters for its customers. It is during this stage that the leaders and teams experience what it would be like to be a customer of the system and so build sufficient dissatisfaction with the system today to start to overcome the natural resistance to change that stops people from moving from the status quo.
- 8.3 The Discovery stage builds on the outputs of the Set Up Stage. Having created a strong Plan and clear Terms of Reference will make the Discovery stage progress rapidly and avoid potential stumbling blocks. Other relevant HMEP Toolkits to guide the Discovery could include using the HMEP Lifecycle Planning Toolkit which includes a whole life cycle costing model.

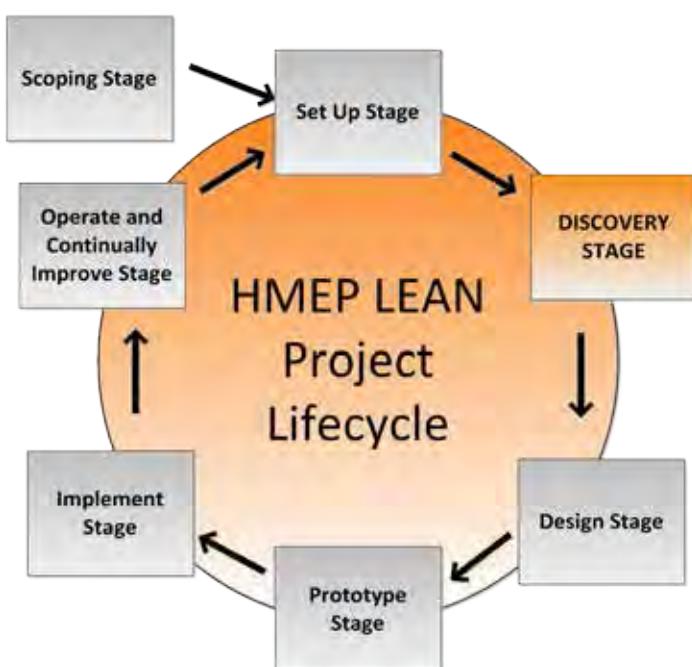


Figure 8 – The Discovery Stage in the HMEP LEAN Project Lifecycle

QHMEP
Highways Maintenance Efficiency Programme

DISCOVERY STAGE SUMMARY

Purpose: To build a shared understanding of the current system from a customer perspective

| | |
|--|--|
| Key activities: | Outcomes & Products: |
| <ul style="list-style-type: none"> Mobilise and brief core team Design communication and engagement for wider stakeholder groups Agree Purpose and Customers of system Understand Demand placed on system Understand Flow of work in system Understand Capability of system to meet purpose Understand resource consumed by the system Introducing LEAN Leadership competencies Create System Picture Communication and engagement with wider stakeholder groups | <ul style="list-style-type: none"> Clear statement of Purpose System Picture including both the 'what' and 'why' of the way that work is done Understand what it like to be a customer of the system Stakeholder plan and communication plan Economic Model |
| Key to success: | |
| <ul style="list-style-type: none"> Leaders and teams working together Build sufficient dissatisfaction to overcome resistance to change | |

Discovery Data c/o Shropshire County Council



8.4 For each of the key activities in the Discovery stage the following elements are outlined:

- Purpose
- Activity Description
- Outcomes & Products
- Tools & Models (where appropriate)



Shropshire County Council: Discovery day mapping out the inefficient routes that gangs travelled in a day.

DISCOVERY KEY ACTIVITY 1: MOBILISE AND BRIEF CORE TEAM

PURPOSE

To prepare the core team to start the Discovery stage.

ACTIVITY DESCRIPTION

In this activity the Operational Leader and Strategic Leader will brief the core team on:

- The scope of the project.
- The anticipated outcomes.
- The timescales of the project.
- The time commitment needed from the team.
- An introduction to LEAN.
- The Operational Leader will emphasise to the team that the purpose of the stage is to ‘understand’ not to judge, blame or defend.

In this activity the Operational Leader and Strategic Leader will brief the core team. If it is necessary to have a period of time between the briefing and the start of the Discovery data collection to free up staff then bring the briefing forward to build this in advance so that this does not delay the overall project.

OUTCOMES AND PRODUCTS

Core team ready to start the Discovery stage.

DISCOVERY KEY ACTIVITY 2: DESIGN COMMUNICATION AND ENGAGEMENT FOR WIDER STAKEHOLDER GROUPS

PURPOSE

To ensure that all stakeholders are considered and that a plan is developed to manage the communication and engagement.

ACTIVITY DESCRIPTION

The Operational Leader will design a communication plan and an appropriate engagement plan for the wider stakeholder groups. This will include anyone directly or indirectly impacted by the project. The stakeholder group may be from several organisations – for example in a Highways Agency collaborative working project, supply chain partners would need to be engaged.

The stakeholder plan should clearly identify how the key stakeholders are going to be engaged in the project to ensure their buy-in and support. It should include:

- Stakeholder identity and why they are a stakeholder.
- An assessment of their current level of support and the level of support required for the project to be successful.
- How they will be engaged to maintain or change their level of support e.g. They will be invited to spend a day with the core team every two weeks in order to gain a normative experience of how the system currently works. The activities to engage the stakeholders should be reviewed and refined regularly to take account of what is working well and what needs to be improved.

Communication plan should take advantage of all current communication channels, using those that work best for the organisation and stakeholder groups. Effective communication is of critical importance to ensure that an ‘us and them’ feeling doesn’t develop between the project team and the rest of the organisation. The Communication plan should include:

- The purpose of the communication e.g. to inform, to influence, to motivate.
- Who will communicate and by what method e.g. at team meetings.
- When will the communication be done.
- How will effectiveness of the communication be measured.

OUTCOMES AND PRODUCTS

Stakeholders are fully engaged
Stakeholder plan and communication plan

Tools & Models

Stakeholder Management (see Appendix 1).

DISCOVERY KEY ACTIVITY 3: AGREE ‘PURPOSE’ AND ‘CUSTOMERS’ OF SYSTEM

PURPOSE

To facilitate the team to co-create a clear understanding of the customers of the system, the purpose of the system and what matters to the customers when they interact with the system.

ACTIVITY DESCRIPTION

The Operational Leader will facilitate the core team, and the leadership group, to clearly articulate:

- Who the customers of the system are. (There may be a chain of customers).
- The purpose of the system from the perspective of the customers.
- What matters to customers when they interact with the system.

This is a critical activity as it is from clarity of ‘Purpose’ and a real understanding of ‘Customers’ that everything else flows.

OUTCOMES AND PRODUCTS

Clear statement of ‘Purpose’, ‘Customers’, and ‘What Matters’ to customers.

Tools & Models

Structured questions and template to support agreement of Purpose and Customers.

Agreeing ‘Customer’ and ‘Purpose’

The Customer and Purpose need to be understood as these provide the context for everything that follows – when there is a clear understanding of who the customers are and what they want then the system can be redesigned to meet these needs as efficiently as possible. These answers should be co-created to allow the leaders and the front line teams to own the outcome of this activity, rather than anyone else trying to convince them that it is right. If the group cannot reach a unanimous view at first, then agree a ‘working definition’ and come back to this further into the Discovery stage.

The first question, ‘Who is the customer?’ often creates many quite heated conversations with responses varying from Central Government to Politicians and Directors and most often including the public. In most instances all of the people and groups identified in such conversations are stakeholders in the system, but there is always a primary customer and identifying them is important. The LEAN definition of a customer is anybody that receives output from a process. The key question to ask to tease out the identity of the primary customer is ‘If they were taken away would the system still need to exist?’

When the answer to this question is ‘no’ then this is the primary customer. Sometimes the customer will place a direct demand on the system e.g. call up about a pothole, but often the customer will benefit from the output from a process but have no direct contact with the process e.g. a road user who travels to work on a road that has been resurfaced. Sometimes there are chains of customers and groupings of customers, which can be useful to understand when designing services.

The second question ‘What is the purpose of the system’ can also create some interesting debate. Responses can vary from achieving compliance with regulation and minimising risk to more customer focused articulations. The key tip here is to keep reminding everybody involved in the conversation that the purpose should be articulated from the perspective of the customer, as failing to do so will result in very compliant systems but very unhappy customers. If customers are unhappy it creates a lot more work in rework, dealing with complaints and doing work for those people that shout loudest, not necessarily the most important work. Having a clear articulation of Purpose from the customer perspective can be used in all conversations with all stakeholders when determining such contentious issues as prioritisation.

A supplementary question to ‘What is the Purpose in customer terms’ is to ask what matters to customers when they use Highways Services. This can also help in understanding how well the system performs now and to design improved performance into the new system.

The following table is intended as a resource to help answer these questions and for illustrative purposes it has been populated with some example answers.

| | |
|---|---|
| Customers (If they were removed then the system would not need to exist) | The public and business users of the network |
| Purpose in customer terms (What do the customers want from the system) | To enable people and goods to travel predictably in a safe and timely manner. |
| What matters to customers (What do they most value) | Availability of the network. Fitness for purpose of the network (It is not going to damage my vehicle due to defects, signs are visible and helpful etc.). Predictability of travel times. Speed of travel times. Safety of travel. They understand what we are doing and we do what we say. |

Table 7 - Example System Template: The Local Authority Highway Service

There may be multiple customers to take into account when looking at complex projects – for example in a Utilities joint working LEAN project the customers of Highways may be described as in the example above but customers of a Water Utility Company would be different. The water customers might have a different purpose such as “I want my water

available without interruptions, safely and at a low cost.” For these projects with multiple customers a joint purpose must be created that maximises outcomes for all sets of customers.

DISCOVERY KEY ACTIVITY 4: UNDERSTAND DEMAND PLACED ON SYSTEM

PURPOSE

To facilitate the team to get a thorough understanding of the demand placed upon the system.

It is the co-creation that allows the leaders and the front line team to own the picture of Demand that is built. A thorough understanding of Demand is important as it informs the scale of improvement that is possible (by turning off failure demand) and the predictable volume of value demand that has to be designed against. Discovery is also an important step in building dissatisfaction for the team and so creating momentum for change.

ACTIVITY DESCRIPTION

The Operational Leader will facilitate the team to understand the demand placed upon the system by the customers of the system. The demand is sampled and the team find out the following:

- What are the demands placed on the system and by whom?
- What channels into the system exist?
- What matters to the customer when they place the demand?
- How much of the demand is placed and in what frequency and by what channel?
- Is the demand ‘Value’ (what the customer wants to place) or ‘Failure’ (a demand that the customer does not want to place. Value and failure are contextualised by the purpose of the system. For example if an IT Help Desk has the purpose of solving problems then it sees a problem call from a customer as value, if its purpose is to help customers get value from their IT then it sees a problem call as failure because nobody wants things to go wrong. The ratio of value to failure demand is a strong indicator of how well the system is meeting its purpose.
- Is the demand ‘clean’ so that it can be processed easily through the system, or is it ‘dirty’ and in need of more work before it can be processed?

Consistent with the principle of standing in the shoes of your customer the Operational Leader will facilitate the team to experience what it is like to place a demand on this system. This can be done in a number of ways and is designed to best suit the system being changed. Two of the more common methods are to record calls and to then listen to them as a team, or to observe ‘live’ demand being received by the system. The Operational Leader will then facilitate the team to both understand Value and Failure, but also the customer experience. Where possible, through local groups, Councillors, face-

to-face conversations or questionnaires, engage the public themselves in understanding their customer experience. Their direct feedback about their experiences and their needs is much more powerful in their words than in a second-hand interpretation of them.

Demand is sampled and analysed in this activity until the team are confident that they are not learning anything new.

OUTCOMES AND PRODUCTS

Statistical process control charts that describe volume of demand over time.
Ratios of value and failure demand received into the system.

Tools & Models

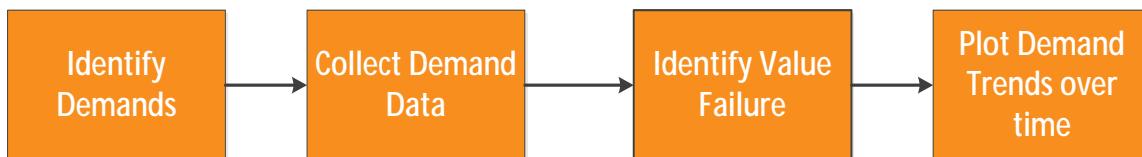
Using SPC charts (see Appendix 2)
Change Readiness Model (see Appendix 3)
Demand Analysis (see below)

Demand Analysis

In the context of a LEAN project ‘Demand’ is something received that triggers work in response. Understanding these triggers of work is of critical importance when analysing the current system, and when designing the new system. It may seem patently obvious that in order to create an effective system the demands placed upon the system should be understood, but it is not uncommon for this knowledge to be lacking in practice. It is even more common for Managers to bemoan that they do not know what will happen tomorrow but studying demand over time often shows that it is predictable and demonstrates what can be expected in the future.

In the context of a LEAN project, and consistent with the principle of co-creation, the analysis of ‘Demand’ should be undertaken through group facilitation with all participants given the opportunity to voice their views. Sometimes it is not possible to reach a unanimous view in one session and a ‘working’ definition may have to be agreed and revisited as the team learns more. Forcing people to the view of the loudest in the group is not recommended as it just drives underground any dissenting views, it is far better to name the diverging views and move on with a ‘working’ definition.

The following diagram describes the steps that need to be undertaken to analyse demand. Whilst drawn as a linear sequence of steps it is not unusual to re-visit earlier steps as more is learned:



**PROJECT TEAM COLLECT DATA AND ANALYSE
TOGETHER IN GROUP SESSIONS**

Figure 9 – Demand Analysis Process

Identify Demands

The first task for the LEAN project team is to identify all of the demands that come into their system and the channels through which those demands are placed. This is normally done in a group session and should be seen as a starting point not an exhaustive list as more can be added later. In this group session it should also be identified where in the business to go to in order to get details about the demands listed and what matters to the person that has placed that demand. As an example, one Highway Authority discovered that demands came into their system through 17 different channels with many request bypassing the Authority's contact centre operations and often going directly to the highways gangs supervisors.

Collect demand data

Having created the initial list of demands the next task is to go into the business and collect the following for each of them:

- How many of the demand are received each day, week, month (as appropriate) over the last two years if the data is available.
- The split of volume across channel e.g. by phone, email, walk in.

Identify ‘Value’ and ‘Failure’

Having established the volumes and frequencies the next task is to categorise each demand as a ‘Value’ or a ‘Failure’ demand. An important LEAN principle is to understand and minimise ‘Failure’ demand while consistently responding to ‘Value’ demand to best deliver what matters for customers. Failing to correctly categorise demand can lead to spending a lot of time, energy and money on getting better at dealing with failure rather than seeking to systematically switch it off.

For a ‘Value’ demand - Is it a demand that the customer wants to place in order for the system to deliver its’ purpose for them?

For a ‘Failure’ demand – Is it a demand that the customer does not want to have to place and is having to do so because something has gone wrong?

In order to understand if some demands are ‘Value’ or ‘Failure’ it may be necessary to undertake a sample test, examples most often include telephone calls or emails where the

customer is chasing progress or reporting faults for a second or subsequent time. The same may also be true for defects reported by Safety Inspectors following an earlier failure of the fix. The best way to do this sampling is to listen to calls, to check email and to look at the history connected with defect reports.

A simple table like the following can be used for this purpose.

| System: Highway Authority Reactive Maintenance | Demand Analysed: Calls into the Contact Centre on Monday 18 March 2013 | |
|---|--|---------|
| Sample Call | Value | Failure |
| I want to report a pothole that has just appeared outside of 12 Acacia Avenue | V | |
| Your guys came and fixed the pothole outside of my house last month but it has appeared again | | F |
| I reported a pothole outside of my house 2 months ago and nothing has happened | | F |

Table 8 - Demand sampling table

Plot demand trends over time

Most often data is viewed as a single snapshot at a point in time, in other words treated as if it has no connection with what has happened before it or what will come after it. Data is often compared with this time last year or perhaps with last month. The result is that there may be lots of data but not quite so much knowledge. The LEAN approach to understanding the predictability of volume demand into the system is to plot volume data (either by day, week or month or whatever is identified as the frequency) over a long enough period of time to ensure that trends are visible. This method removes opinions from the debate about whether the volume of demand (and hence the workload as it is demands that trigger work) is predictable, and can thus be planned for.

The types of chart that are used in a LEAN project are called statistical process control charts and they are described in Appendix 2.

The following table is provided as a template to capture demand. For the purposes of the illustration Safety Inspector reported defects are shown as demand into the system and for ease of illustration have not distinguished between categories of defect.

| System: Highways Authority Reactive Maintenance Repairs | | | | | | |
|---|------------------------------|------------------|----------------------|------|------|------|
| Demand and What Matters | Channel | Value or Failure | Volume and Frequency | | | |
| | | | Wk 1 | Wk 2 | Wk 3 | Wk 4 |
| New defects reported by Safety Inspectors What Matters: Fixed right first time and in a timely manner | Interface between IT systems | V | 53 | 47 | 73 | 75 |

| System: Highways Authority Reactive Maintenance Repairs | | | | | | |
|---|------------------------------|------------------|----------------------|------|------|------|
| Demand and What Matters | Channel | Value or Failure | Volume and Frequency | | | |
| | | | Wk 1 | Wk 2 | Wk 3 | Wk 4 |
| Repeat defects reported by Safety Inspectors What Matters: Defects are fixed right first time so that failed fixes do not have to be reported | Interface between IT systems | F | 27 | 25 | 57 | 65 |
| New defects reported by the members of the Public What Matters: Fixed right first time and in a timely manner | Phone to Contact Centre | V | 55 | 45 | 57 | 65 |
| Progress chasing by members of the public | Phone to Contact Centre | F | 40 | 43 | 55 | 49 |
| Complaints by members of the Public | | | | | | |

Table 9 – Typical Demand Capture Template

DISCOVERY KEY ACTIVITY 5: UNDERSTAND ‘FLOW’ OF WORK IN SYSTEM

PURPOSE

To understand the ‘Flow’ of work in the system. A thorough understanding of flow is important as it informs the scale of improvement that is possible (by turning off waste steps). It is also an important step in building dissatisfaction for the team.

ACTIVITY DESCRIPTION

In this activity the Operational Leader will facilitate the team to understand the flow of work in the system. That is the actual work that is done, either in response to a customer demand or to any other trigger. The aim is to understand the current work sufficiently to

safely design a new system from a position of knowledge.

OUTCOMES AND PRODUCTS

Picture of the flow of work in the system.

Tools & Models

Understanding Flow – Process (see below)

Understanding Flow checklist (see below)

Model Picture of Flow (see below)

Understanding Flow - Process

In the context of a LEAN project flow describes the activities or steps that are undertaken by the Local Authority and/or their partners. When understanding flow the Project Team map those activities from the originating source demand (or trigger) up to the point that the purpose of the demand has been satisfied. A simplified flow diagram is included to illustrate this principle.

It is important to note that the flow that the project team record and analyse must be what really happens in practice, **not** what the manual says should happen or what the managers think should happen but what really happens on the ground. It is only by doing this that the work can really be understood in sufficient detail that a new system of work can be designed in confidence.

Consistent with the principle of co-creation, the analysis of flow should be undertaken through group facilitation with all participants given the opportunity to voice their views.

The following diagram describes the steps that need to be undertaken to analyse flow. While drawn as a linear sequence of steps it is not unusual to re-visit earlier steps as more is learned:

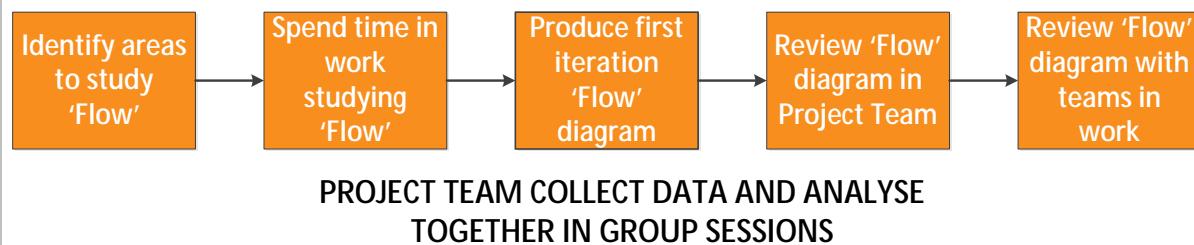


Figure 10 – Mapping system flow process

Identify areas to study flow and make arrangements.

As described above flow must represent what actually happens not what should happen. On that basis flow can only be understood by actually spending time in the work observing what really happens, and talking to people as they do the work. It is not the same to take an ‘expert’ away from the work and ask them to describe what happens, as it is second nature

to them they will miss things that they just take for granted.

There are two main options when identifying where to go and study flow – either to follow each of the demands in turn from team to team, or to spend time with each team and observe all of the work done in the team that is in the scope of the project. The latter is simpler and normally faster but both are valid.

A LEAN project is about understanding how the system works and why it works in that way, not judging or blaming individuals. This distinction is really important for project team members to understand as teams doing work are much more likely to talk with them openly if they believe that they are seeking to understand what happens and why it happens (for the purpose of improving) rather than seeking to find a scapegoat to blame.

Having identified where to start it just remains to make the necessary arrangements with the teams for members of the project team to spend time with them. During this time the project team is not taking people away from doing their work, rather observing the work being done and talking to people as they go about their work. It therefore does not detract from on-going operational activity.

Spend time in the work studying flow

To aid the members of the project team in this task, use the ‘understanding flow checklist’ of questions to ask, and to illustrate what a flow diagram looks like a simplified ‘model picture of flow’ is included below.

In the checklist the question ‘Why is the work done that way?’ is included, as well as ‘What is done?’ – the reason is that it is important to understand the why as well as the what is that this will allow the team to address any underlying reasons behind the design of work. For example works orders may have to be approved by a Team Manager because of a concern about quality or a trust issue with the volume of work that may be ordered. Failing to understand ‘why’ work is designed as it is can result in us implementing new systems of work only for them to be altered because an underlying issue hasn’t been addressed. The underlying reason why work happens as it does is called a ‘system condition’.

Produce first iteration flow diagram

Having observed the work being done and followed up with the sources of additional data (such as volumes and frequencies) the first iteration of the flow diagram can be produced. Flow diagrams should be built using flip charts or brown paper not in PowerPoint as they will be used in a very hands-on manner by the project team.

Represented in the flow diagram are:

- The trigger of the work.
- The volume and frequency and source of the trigger.
- The flow of steps in the work and who does the work.
- The variation in the steps and why that variation occurs.
- A description of why work happens as it does.
- Volumes and frequencies for triggers.
- Volumes and frequencies of work that varies from the normal flow (e.g. when a defect can’t be fixed because the right equipment or material weren’t available).

Review flow diagram in Project Team

Having created the first draft of the flow diagram it is important to review in the project team to ensure that all of the team own what is emerging. The purpose is to challenge what has been described but it is important that it is fact that is sought not opinion, which may result in follow up activity outside of the review to confirm the data originally collected. It is likely that the review with the project team will be undertaken a number of times as the flow diagram is refined and eventually agreed.

As part of the review with the project team it is necessary to categorise each of the steps in the flow as either a ‘Value’ step or a ‘Waste’ step. The definition of each is described below. The reason that this is done is because when re-designing the system as much of the waste activity should be designed out as possible:

- A ‘Value’ step is an activity that directly contributes to the delivery of the purpose of the system e.g. actually fixing a defect.
- A ‘Waste’ step is an activity that does not directly deliver the purpose of the system but is done either:
 - Because it is the way that the work has been designed e.g. approving a works order before the work can be done.
 - Because it has always been done that way even if it is no longer required and could be stopped.
 - Because it is legislative.

The ‘Waste’ activity that is as the result of legislation cannot be removed but must simply be delivered as effectively as possible. It is not possible to remove all ‘Waste’ activities but concentrating on how to just do the steps that create value for the customer can deliver significant financial savings, generate capacity in the end-to-end system and improve the experience for the customer. Some of the types of waste, defined by the Highways Agency, that could be found include:

- Transportation.
- Inventory (Stock) excess.
- Motion excess.
- Waiting time.
- Over production or construction.
- Over processing and extra process steps.
- Defects or rejects.
- Skills misapplication.

Review ‘Flow’ diagram with team in the work

Having agreed the ‘Flow’ diagram with the project team it is then reviewed with the team that do the work:

- To ensure that it does accurately represent their system and.
- That they are engaged with the project and experience that the project is being undertaken with them and not done to them.

If it is necessary to amend the diagram then the changes should be reviewed with the project team.

Understand Flow Checklist

| System: Question | Area/Team: | | |
|--|---------------------------------|---------------------------------|---|
| | Included in Flow diagram? | Reviewed in Project Team? | Reviewed with team that do work? |
| What triggers the work, where is it received from and when is it received? (e.g. may be condition data, a works order or a phone call) | | | |
| How many do you get and from where can I check volumes and frequencies? | | | |
| What is the first thing that you do? And why is it done this way? (e.g. policy but you may need to investigate the reason for the policy which may take you into different parts of the service than where the work is done) | | | |
| What are the second and subsequent things that you do? And why is it done this way? | | | |
| What is the last thing that you do, why is it done this way, and where is the work passed next? | | | |
| Are there variations in what you do and why? (e.g. a Safety Inspector may have to stay with an emergency defect until it is made safe). | | | |
| If there are variations what are they and how often do they occur? Where can I check on volumes and frequencies? | | | |

Table 10 – Typical Flow Checklist Template

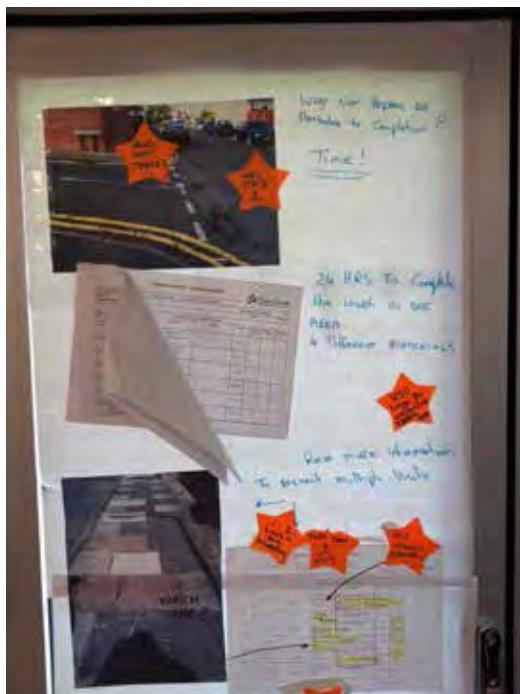
Model picture of flow

Model ‘Flow’ Diagram

The two very simplified flow diagrams below are provided for illustrative purposes. Flow diagrams should be built using flip charts or brown paper not in PowerPoint as they will be used in a very hands-on manner by the project team.

There are two options when producing a flow diagram, either simply showing the flow as it happens with no systematic distinction between the teams or individuals that do each step, or showing the flow in ‘swim-lanes’ with a lane for each team or individual if appropriate. The simplified example flow diagrams are of the work done to repair defects.

More complex flow diagrams could be created in a planned maintenance LEAN project as the work was mapped end to end through many teams from first trigger and identification of the need, through prioritisation and funding, through design and into delivery until the project was complete.



Sandwell Metropolitan Borough Council: LEAN team members working out the flow of poor data at handover to the gangs.

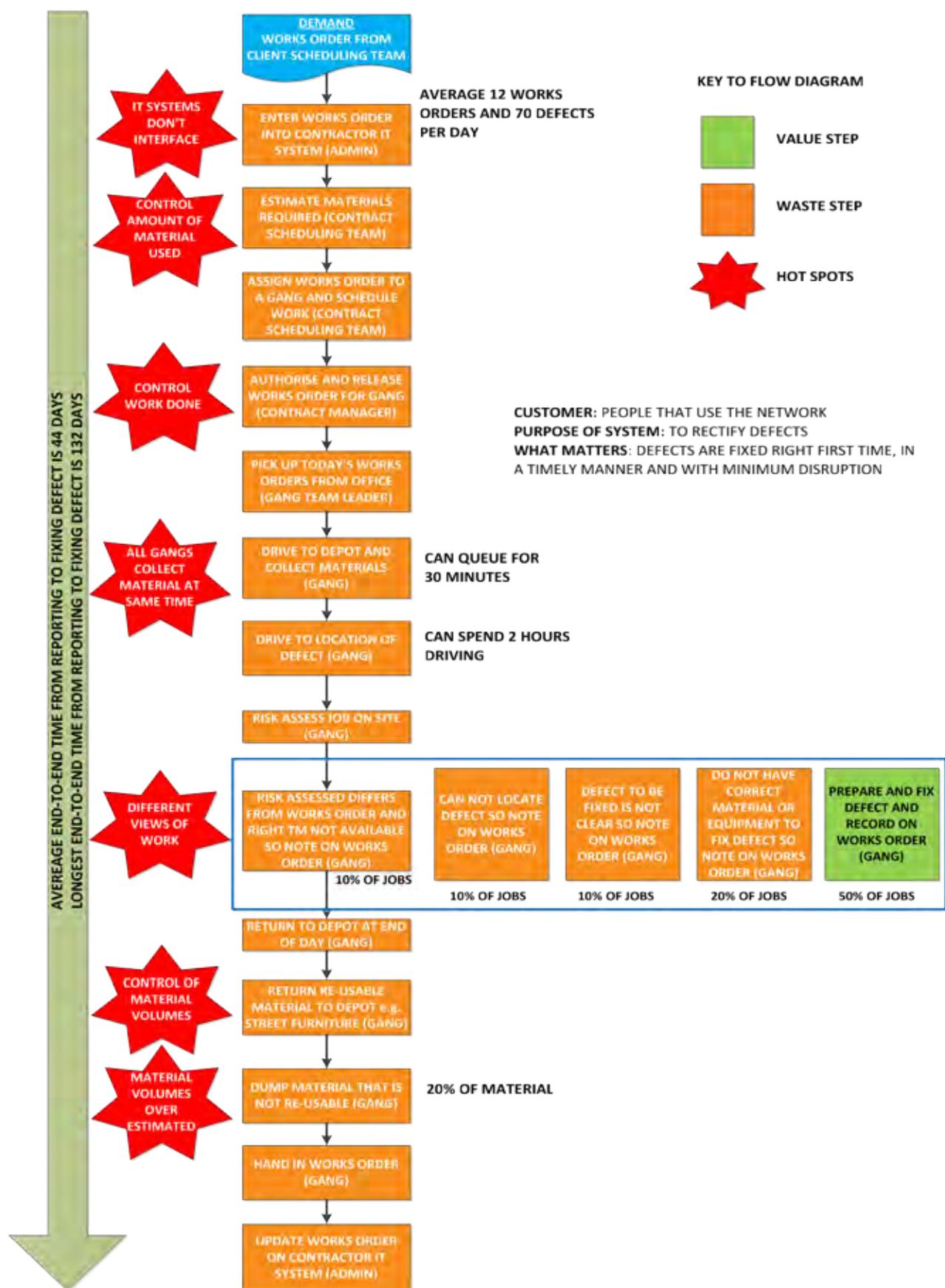


Figure 11 - ‘Flow’ diagram without swim lanes

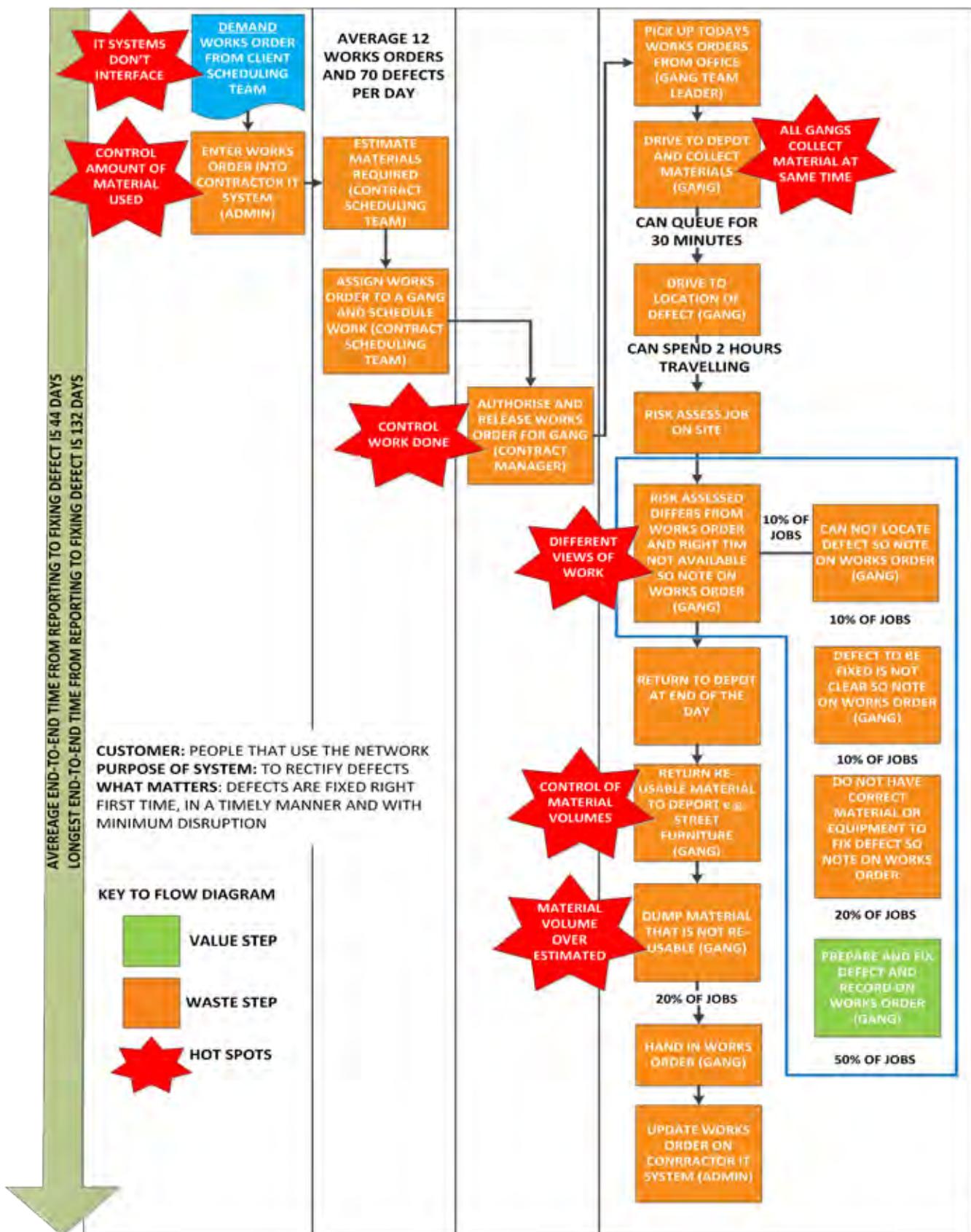


Figure 12 - ‘Flow’ diagram with swim lanes

DISCOVERY KEY ACTIVITY 6: UNDERSTAND ‘CAPABILITY’ OF SYSTEM TO MEET PURPOSE

PURPOSE

To create a series of measures that demonstrate how well the system delivers what matters for its' customers.

As with the earlier activities in this stage helping the team, including the Leaders, to understand how well the system delivers what matters for its' customers contributes to the building of dissatisfaction with the current system.

ACTIVITY DESCRIPTION

The team will understand how well the current system achieves ‘what matters’ for its' customers. In addition the Operational Leader will help the team to understand how well the current measures and targets work. Do they help the system to learn and improve?

The purpose of measurement is to understand how well the system works today and to provide learning so that the system can be improved. A good measure must therefore:

- Identify how well the system delivers its purpose e.g. how long does it take to fix a problem reported, how often are problems fixed right first time.
- Identify where there are weaknesses in the performance of the current system e.g. problems are fixed very quickly but they fail almost as quickly and have to be fixed again.
- Be linked to a customer outcome.

The Operational Leader will take the team through the following steps:

- Identifying what is measured today and collecting ‘live’ examples of these current measures.
- Agreeing with the team the test of a good measure from the perspective of a customer and creating a system that can learn.
- Agreeing with the team good measures for the system.
- Agreeing with the team if the good measures are currently recorded or whether they have to be collected especially and if so how that can be done.
- For the ‘good’ measures the team will build Statistical Process Control (SPC) charts to show how well the system is delivering what matters.
- For the current measures the Operational Leader will help the team to understand if they pass the test of a good measure.

OUTCOMES AND PRODUCTS

Statistical Process Control (SPC) Charts that show how well the system delivers what matters.

Tools & Models

Using SPC Charts (see Appendix 2)
 Change Readiness Model (see Appendix 3)

DISCOVERY KEY ACTIVITY 7: UNDERSTAND RESOURCE CONSUMED BY THE SYSTEM

PURPOSE

To co-create an economic model that identifies the scale of savings that are possible.

ACTIVITY DESCRIPTION

In this activity the Operational Leader will facilitate the team to understand the costs (people and non-people) that are consumed in the system to deliver the level of performance described in the ‘Understand Capability’ activity. The Operational Leader will help the team to:

- Collect the cost data from the system (people and non-people).
- Map the cost data to the picture of the system that has been built.
- Facilitate the team to understand the scale of cost that is associated with dealing with failure demand, dirty demand or undertaking waste steps in the flow. This gives the team, including the leaders, an understanding of the scale of savings that are available. This should be the true cost and so must include cost of dealing with waste and failure and be an end-to-end, whole lifetime cost.
- Where there is more than one partner involved in the system, e.g. client and provider, the total cost must be measured and used. If costs are taken from only part of the system it is possible to reduce the cost in that part but simply move the cost elsewhere, potentially even increasing the total cost.

OUTCOMES AND PRODUCTS

Economic Model.

Tools & Models

Economic Model

Building an Economic Model

Having built a picture of how the system currently performs the project team can collect all of the people and non-people costs associated with the current system. This data can be added to the system picture and an example is shown below.

The purpose of building an economic model is to describe the scale of cost associated with the current way of working, and to particularly describe the scale of opportunity associated with the waste and failure in the system.

The questions to be answered are:

- What are the total costs associated with the operation of the system and how is this made up. It is important to understand how much of the cost is sensitive to changing the operation of the system e.g. material costs and people costs are readily changed but the cost of premises is more likely to be fixed.
- How much of the cost is associated with failure and waste in the system. It is important to note that not all waste and failure can be removed but it does give an indication of the ‘size of the prize’.

Using as an example the Flow diagram below the team may learn that:

- The cost of the Reactive Maintenance system is £750,000 per annum which comprises £250,000 for labour, £250,000 for material, £150,000 for the hire of plant and equipment and £100,000 overhead for premises. Corporate overheads and allocations should be taken into account where possible to give a true picture of the total cost.
- The Gangs waste time queuing, travelling to jobs that could be planned better, travelling to jobs that they can't do, and travelling to jobs that have been fixed before and failed. It is likely that the new system will cash some of the savings and make better use of some of the capacity to do more work.
 - The Gangs are only on site for 62.5% of their time, and when on site only 25% of the work they do is fixing defects right first time – even ignoring the travel and queuing times this means that only 25% of their time creates value giving an opportunity to do something different with the other 75% or £187,500. The ‘pound on the ground’ could be significantly increased.
 - 50% of the material used is fixing defects that have previously been fixed and failed – A further 20% of material is dumped because it can't be used in the day – This equates to an opportunity to save (or get more from) up to 70% of the material costs or £175,000.

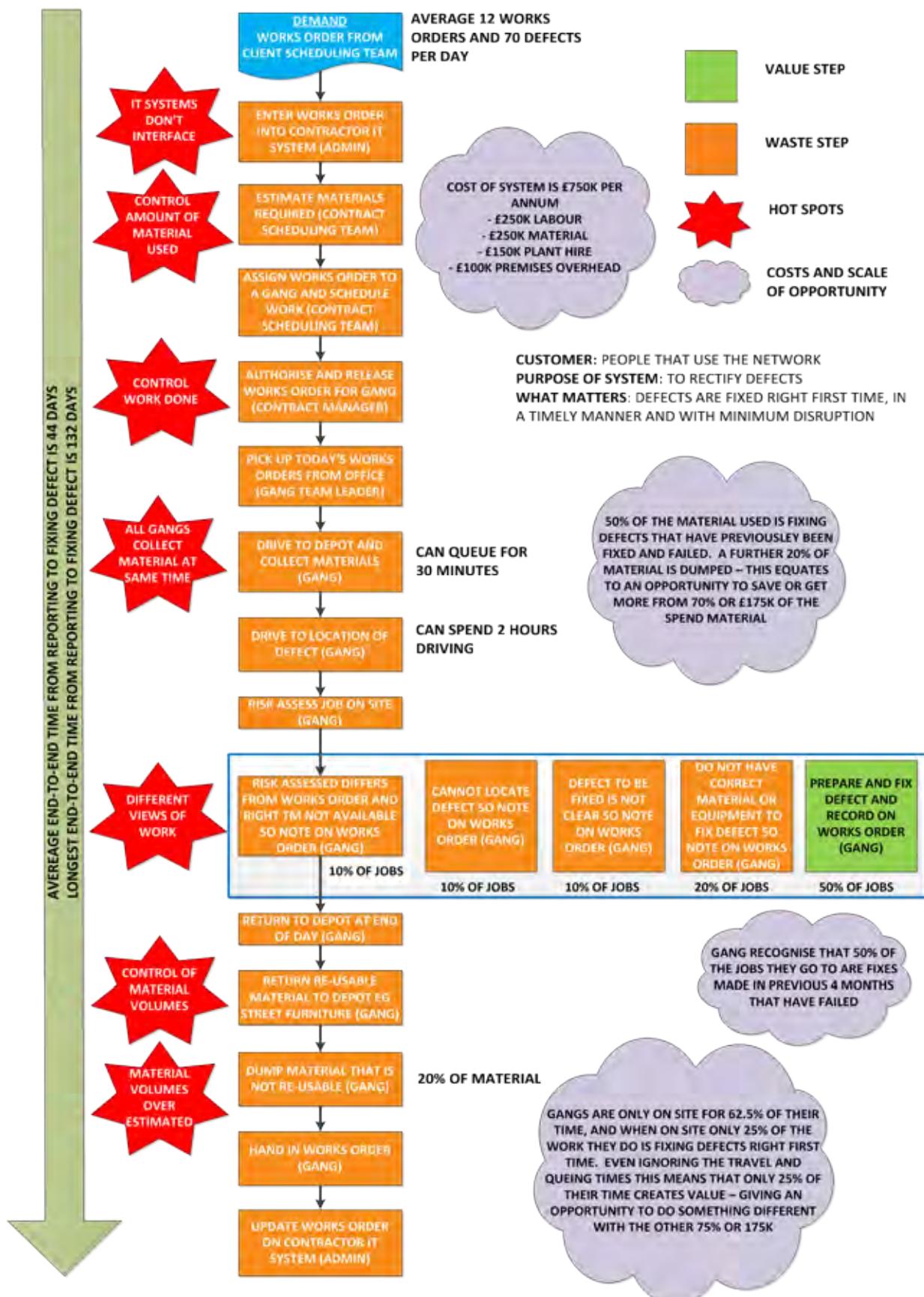


Figure 13 – Model Flow Diagram with cost of waste and failure annotated

DISCOVERY KEY ACTIVITY 8: INTRODUCING LEAN LEADERSHIP COMPETENCIES

PURPOSE

To understand the new Leadership Competencies and to practice their application.

ACTIVITY DESCRIPTION

The Operational Leader will work with the other leaders of the system to introduce to them the ‘New Leadership Competencies’. The Operational Leader will help them to:

- Compare and contrast ‘Command and Control’ and LEAN leadership behaviour, with particular emphasis on the impact of that behaviour.
- Reflect on their own ‘normal’ leadership style and explore the implications of changing that style.
- Agree a plan for how the Leaders can practice the new Leadership competencies, if they are ready to do that, and if not then plan how they can further explore the implications of leadership styles.

This activity will encourage the leaders to reflect on their own leadership style and practice.

OUTCOMES AND PRODUCTS

Plan for Leaders to practice new Leadership competencies.

Tools & Models

New Leadership Competencies (see Appendix 4)

Leicestershire County Council:

“For us, the biggest benefit of using the HMEP LEAN Toolkit has been the high level of staff engagement. We have looked at the whole end to end process, including contractors and sub-contractors, and they have really owned the change”.

DISCOVERY KEY ACTIVITY 9: CREATE ‘SYSTEM PICTURE’

PURPOSE

To co-create a picture of their system that they own. This is an important step in building dissatisfaction as it offers the Operational Leader and the team plenty of opportunity to bring together all the evidence about current performance and to discuss what they have learned.

ACTIVITY DESCRIPTION

The Operational Leader will facilitate the team to build a summary picture of the system that tells the key elements of what the team has discovered during the ‘Discovery’ stage. This ‘System Picture’ will normally be no more than a couple of flip charts in size and it will show:

- Who the customers of the system are.
- What the purpose of the system is.
- The de facto purpose of the system if one has emerged – for example fixing defects in 7 days (which may then fail) rather than fixing defects right first time.

The demands that are placed on the system supported by:

- The volume and frequency of the demand.
- How much of the demand is clean and dirty.
- Is the demand value or failure.
- What matters to the customer when placing the demand.
- The major processes in the system with an indication in the flow of how many demands follow which route through the system.
- How capable the system is of delivering what matters for its’ customers.
- The performance levels that are reported by the measures / targets currently in use in the system.
- The system conditions that have resulted in the system performing as it currently does.
- The economics of the current system.

OUTCOMES AND PRODUCTS

System Picture.

Tools & Models

Model System Picture

- 8.5 The following is an example of a system picture based on the same Highways Reactive Maintenance system described earlier. The knowledge gained in Scoping and Discovery has now been added to the picture including in the ‘star bursts’ a view of why the system behaves in the way that it does. This would normally be drawn on a flip chart not in PowerPoint.



Sandwell Metropolitan Borough Council: Mapping of repeat visits to the same location in three streets highlighting silo working.

Shropshire County Council:

“We all sat around the table thinking it was fine initially and that we wouldn’t have anything to change but seeing it from everyone’s point of view and seeing other people’s worlds it becomes obvious what improvements could be made”.

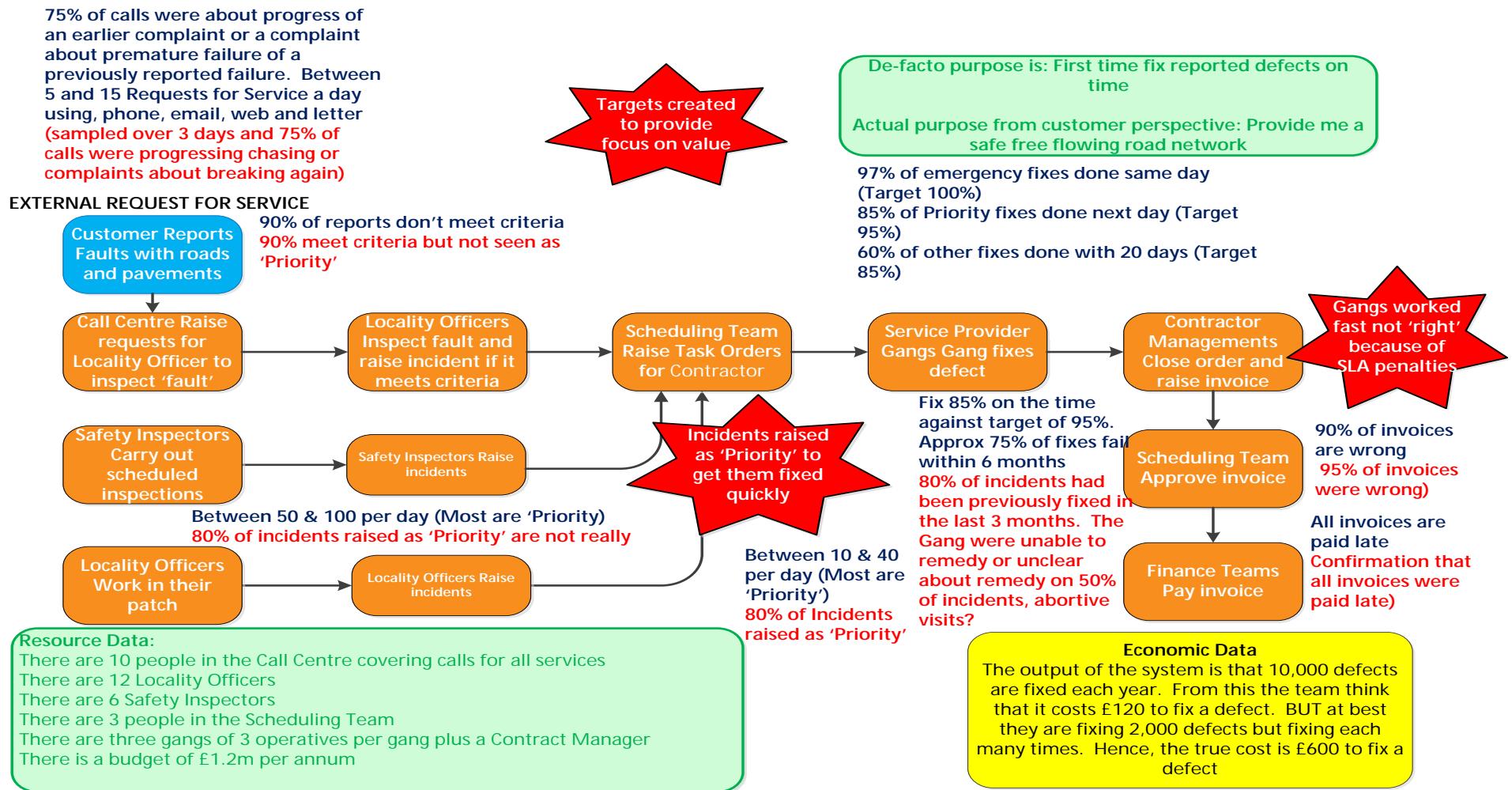


Figure 14 – Example of a system picture

DISCOVERY KEY ACTIVITY 10: COMMUNICATION AND ENGAGEMENT WITH WIDER STAKEHOLDER GROUPS

PURPOSE

To communicate effectively with all stakeholders.

ACTIVITY DESCRIPTION

While this activity is positioned at the end of the stage it is in fact run in parallel throughout the stage. In this activity the Operational Leader will facilitate the team to engage and communicate effectively with the wider stakeholder group who have been identified in the Set Up Stage. Partner organisations such as supply chain partners or Utilities should also be taken into account.

The Communication and Stakeholder plans will be developed by the team at the start of the stage and will then be maintained throughout the stage.

Designed into this activity will be learning loops for the team to learn how well the engagement and communication is working. This will allow them to make refinements to their plans.

OUTCOMES AND PRODUCTS

Stakeholder and Communication Plans are maintained.

Discovery Stage Overview:

The outcomes that will have been delivered in the Discovery Stage are:

- Clear statement of Purpose.
- Agreed Purpose & Customers.
- Demand will be understood.
- Flow will be understood.
- Capability will be understood.
- Economic Model.
- System Picture including both the ‘what’ and ‘why’ of the way that work is done.
- Understand what is it like to be a customer of the system.
- Stakeholder plan and communication plan.

These will give the shared understanding of the system to take to the Design stage. The Design will now be based on data rather than opinion. The Discovery stage will also have built dissatisfaction across the core team and stakeholders, creating momentum for change to take into the Design and Prototype stage.

9. STAGE 3 – DESIGN – “HOW TO” GUIDANCE

9.1 The purpose of this stage is to design a new way of working. This includes:

- Confirming that there is sufficient dissatisfaction with the current system.
- Creating the design for a new system.
- Developing a prototype plan with measures in order to compare the prototype performance with the existing system.

9.2 The Design stage builds on the outputs of the Discovery Stage. It shares the evidence collected on demand, flow, measures and the System Picture to create a common understanding of the current system for all the Stakeholders. This creates the environment where Stakeholders can reach fast, consensus decisions about the best design based on data not opinion. By the end of the stage a design will have been created, and be ready to prototype, that has eliminated waste wherever possible.

9.3 The case studies in the Case Study Appendix and in the HMEP products highlighted in the Set Up introduction can be used to help shape the Design.

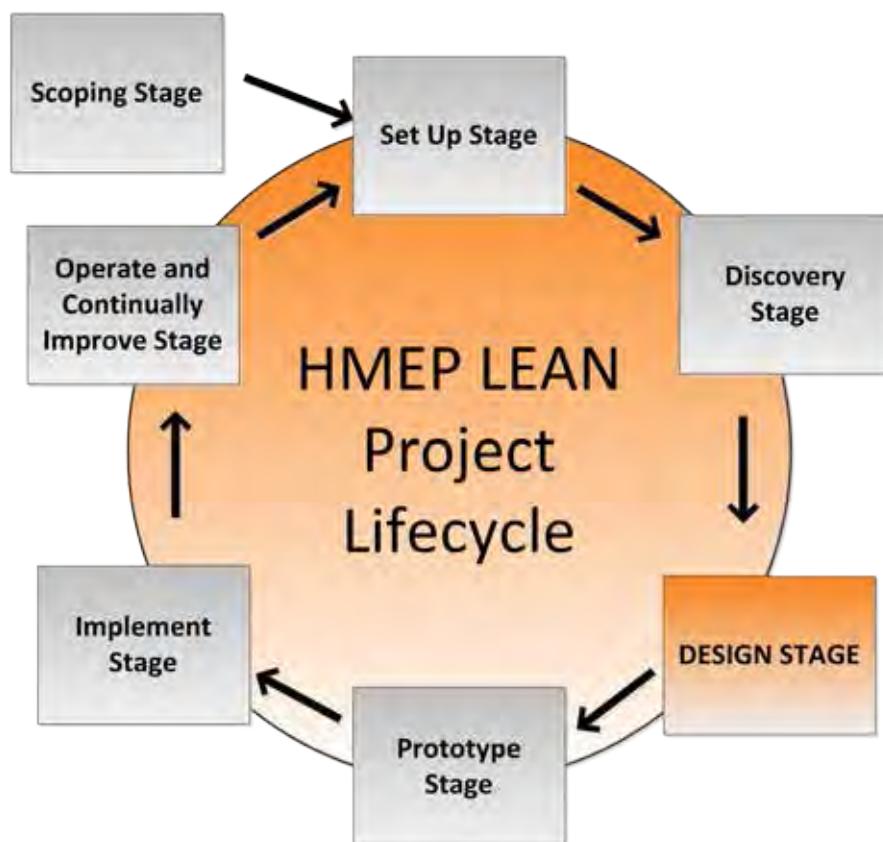


Figure 15 – The Design Stage in the HMEP LEAN Toolkit Project Lifecycle



Highways Maintenance Efficiency Programme

DESIGN STAGE SUMMARY

Purpose: To build dissatisfaction with the current system, to create a design for a new system, and to develop a prototype plan with measures

Key activities:

- Organising the Decision Accelerator
- Design and Delivery of the Decision Accelerator
- “Back to the Garage”
- Adding Further Detail to the Design
- Create Prototype Plan

Key to success:

- High challenge
- All key stakeholders engaged
- Take decisions there and then

Outcomes & Products:

- A well-organised Decision Accelerator event that delivers outcomes
- Good quality, fast decisions
- Agreement to prototype a new way of working
- A detailed design ready to prototype
- Agreed measures of success
- Clear plan to start the prototype as soon as possible



Design Day c/o Leicestershire County Council

9.4 For each of the key activities in the Design stage the following elements are outlined:

- Purpose
- Activity Description
- Outcomes & Products
- Tools & Models (where appropriate)

DESIGN KEY ACTIVITY 1: ORGANISING THE DECISION ACCELERATOR

PURPOSE

A well organised event that includes all who have a stake in the change participating fully and comfortably in the Decision Accelerator. This will contribute to the overall purpose of the stage – to build dissatisfaction, to create the new design and a plan to prototype it.

ACTIVITY DESCRIPTION

The Operational Leader should organise the Decision Accelerator, this should usually last one day (a date will have been set for this in the Discovery Stage). The Operational Leader should:

- Consider who needs to be there (if they have the power to say ‘no’ to change, they should be included).

- Invite them, being clear about the purpose and expectations of outcomes from the Decision Accelerator and why they should attend.
- Book the venue ensuring the location and size of the room is appropriate to who is attending.
- Discovery data will be presented at the Decision Accelerator. Make sure there is enough wall space for the data to be seen clearly by all.
- Organising the comforts (Tea, coffee, lunch).

OUTCOMES AND PRODUCTS

High quality decisions that can be quickly enacted because the right people have been involved in the right way, at the right time.

DESIGN KEY ACTIVITY 2: DESIGN AND DELIVERY OF THE DECISION ACCELERATOR

PURPOSE

- A clear plan for the day
- A well organised event that builds dissatisfaction, creates the new design and plans to prototype it.

ACTIVITY DESCRIPTION

To create a plan for the event. The structure of the Decision Accelerator should include the elements set out in the table below:

1. Introduction

Introduction to the Decision Accelerator (this should be done by the Strategic Leader of the project):

- Setting out the purpose of the LEAN Highways project.
- Setting out the purpose of the day.
- Describing the journey so far.
- Describing the desired outcomes for the day.

Explaining the sequence of the event and why it is important for all to spend the whole day together.

2. How the group will work together

There should be a session aimed at getting consensus on how the group will work together. The purpose of this session is to create a safe working environment - to allow all participants to freely contribute - and offer challenge to the status quo and the new design as it emerges. Ways of working could include:

- Being open and honest.
- Not here to judge/criticise / blame.
- It's data not opinion.
- Everyone has an equal voice.
- Be ambitious.
- Think in terms of customer.

Think in terms of end-to-end system rather than silos.

3. Sharing the data with the group

Data gathering overview. This is when the change team share what they've learned in Discovery with the leaders and participants. This is in order to create dissatisfaction with the current system and build a desire for change. The team, in preparing for the Decision Accelerator will have considered a variety of ways to convey the data that might include taking the participants out into the work to demonstrate, in real life, what they have found. This can take stakeholders out of their comfort zone and be really powerful for people who are not normally working at the front line. It can help build an emotional connection to the data. However, points to remember about sharing the data are:

- Keep it focused.
- Emphasise customers/real data/end-to-end/key points to create impact.

Use hard-hitting data. There is only a small amount of time so think about the key messages to share with the leaders that will create the most impact.

4. Feedback from participants on the data

Invite debate around what has been shared. Remember, this is data and not opinion. Nobody is there to judge or criticise, but to agree to change. This can be done as a whole group or split in to smaller groups depending on the number of people there. This session will maximise peoples' dissatisfaction with what they have learned and further build their desire for change.

5. Confirming participants commitment to change

When the debate over the data is completed, it is important to establish whether participants are ready to experiment with changing the system. Often, the best question to ask is “Now that you understand how the system is performing from a customer perspective, do you want to leave it this way?”

The response you are aiming for is a resounding “No”.

6. Purpose, Principles and Strategic Outcomes guiding the prototype design

Purpose: Establish the purpose of the prototype system from a customer perspective. This should stem from what matters to the customer. An example of purpose would be “A safe and well maintained Highway network”

Strategic Outcomes: Now that there is an agreed purpose, the participants need to agree the strategic outcomes desired based on the data and what matters to customers by inviting debate and by being as ambitious as possible. The outcomes should feel difficult to achieve - if not there is a risk of the outcomes being non-strategic. Outcomes might include:

- Reducing reactive pothole fixes to nil.
- Delivering design projects on time.
- Reducing the days disruption on the network by Highways authorities and Utilities sharing traffic management.

Principles: It is important to agree the principles that underpin the prototype re-design. This will guide how the group is going to work to achieve the strategic outcomes. Examples of principles are:

- Work together to achieve purpose.
- Think end-to-end, not in silos.
- Customer at the centre of everything.
- Decisions based on data.
- Do today's work today.
- Measure performance based on what matters to customers e.g. how long it takes us to fix a pothole right first time.
- Make the process as efficient and cost-effective as possible.
- Remove waste.

A planning framework tool and an example of a plan are provided in the tools and models section to support creation of the Decision Accelerator.

OUTCOMES AND PRODUCTS

Agreement to prototype a different way of working based on data and what matters to customers.

Tools & Models

Change Readiness Model (see Appendix 3)

Event Planning Framework (see below)

Example plan for a Decision Accelerator workshop (see below)

Design Tool - Event Planning Framework:

The planning tool can be used for planning and rehearsing workshops such as the Decision Accelerator to ensure that all aspects are considered so that the event is as effective as possible.

Overview of the planning tool:

- What is the line of sight to the *primary outcome*.
- What are the *secondary outcomes* – positive & negative.
- Who are the *people* – what is the group make-up.
- By what *method* – beginning, middle & end.
- What is the *sequence* of events.
- What are the *safe pause points* if we want to change the plan.
- What *logistics* need to be in place.

The detail used for these planning elements are listed below:

| Planning Elements: | |
|---------------------------|--|
| Primary Outcome | <ul style="list-style-type: none"> • What needs to be achieved by the end of the event. • Why is the group really here? |
| Secondary Outcomes | <ul style="list-style-type: none"> • Other positive outcomes that are needed from the session. • Possible negative outcomes that the session can then be designed to avoid. |
| People | <ul style="list-style-type: none"> • Who needs to be there? • What is the group make up? • Anyone who can say “no” should be part of a decision. • Who are the critical players? |
| Method | <ul style="list-style-type: none"> • How will the session be designed and run to meet the objectives? • Beginning, middle & end. |
| Sequence | <ul style="list-style-type: none"> • What is the sequence of method/events? • Running order and timings. |
| Safe pause points | <ul style="list-style-type: none"> • Planning flexibility into the timing so that it can be adapted on the day if needed. |
| Logistics | <ul style="list-style-type: none"> • What needs to be in place to make the event work? • Communications in advance. • Venue and room layout. • Refreshments. • Materials. |

Table 11 – Event Planning Tool

Design Tool - Example plan for a Decision Accelerator Workshop:

This example of a Decision Accelerator plan demonstrates what it should look like. It is important to plan for this as there is a lot to cover and the day will need structure. Plan for each segment of the day, how long it will take and who will be taking the lead on each specific segment. Please remember that this is an example and that time allocations may differ depending on the transformational project. A good rule of thumb is to spend 1/3 of the day on unpacking the current system, 1/3 of the day on the new design and 1/3 of the day planning the prototype.

| Timing | Subject | Outcome/Output/Description | Lead |
|---------------|--|--|-------------|
| 1000 start | Why are you here and what you are looking to achieve | Introductions Summary of journey to date Summary of why we are doing this – faster, better, cheaper Describe outcomes: <ul style="list-style-type: none"> • A desire by all to change. • A prototype plan (who, what, where, when, how). • Ask others if they want anything else from the Decision Accelerator – capture on a flip chart. | |
| | Explanation of sequence | Explain sequence and why it is important to be here for the whole time. | |
| | How are you going to work together | Group discussion captured on a flip chart | |
| 1030 | Data collection overview | High level view of what the team have done, who was spoken to, where they got the data - i.e. describe the methodology for collecting the data | |
| 1045-1215 | Unpack the data | Get into the detail of the data. Share data in interesting ways and get key messages across Questions and discussions as we go through | |
| 1215 | Reflection on what people have heard | Working in small groups so everyone has a chance to speak and then feedback. You want to hear dissatisfaction with the status quo from the feedback | |
| 1230 | Do we want to change? | Ask each individual if they want to change how they work and why. | |
| 1230-1245 | Define the purpose | Agree purpose from a customers' perspective – group discussion Refine into ‘one-liner’ which is clear and agreed | |

| | | | |
|-----------|----------------------------------|---|--|
| | | by all | |
| 1245-1330 | Outcomes Principles Themes | <p>Agree strategic outcomes.</p> <ul style="list-style-type: none"> • Give the group a pre-prepared list and then let the group discuss them. <p>What are the principles that this team wants to work to in order to achieve these outcomes – based on what has been learnt from the data.</p> <ul style="list-style-type: none"> • Name the ‘elephant in the room’ that roles and money could look very different. • Divide into groups to create these. • Feedback from groups and then bring the principles into themes and get a clear list defined and agreed. <p>Agree themes</p> | |
| 1330-1345 | Lunch | Carry on working once have sandwiches | |
| 1345-1445 | Back to the Garage | <p>Start by dividing into small groups (each should have a maximum of 6 people)</p> <p>Introduce the exercise as one that is designed to help the group to think really differently about how they can work. This will help them to think outside of their existing roles and silos.</p> <p>Back to the garage redesign. Ask the groups to answer the following questions in this order:</p> <ul style="list-style-type: none"> • What is the purpose of the system from the customer’s perspective? • What do they think really matters to their customers? • What are the key steps that really create value for their customers? • What is their design so that they just do the steps that creates value for customers? <p>All these questions will need to be on a pre-prepared flipchart so they can be referred to during the exercise</p> <p>During the group work – go round and challenge them to help break out of the current working e.g. asking if steps in their design are really value steps to customers. Give them sufficient time to think about what the design might look like but try to keep the pressure on.</p> | |
| 1445-1500 | Share new designs | Each team in turn shares their design The job of everyone else is to question and challenge as the ‘voice of the customer’. | |

| | | | |
|-----------|------------------------------|--|--|
| | | | |
| 1500-1515 | Add further detail to design | Ask them to go back into their groups and add detail to the design. Key questions to be on a flipchart | |
| 1515-1530 | Feedback to the wider group | One team at a time Everyone else creates the challenge and possibly can fill in blanks in terms of people, equipment etc. | |
| 1530-1645 | Prototype plan | Create the plan to get the prototype started Agree how to measure the prototype Agree how leaders will support the prototype | |
| 1645 | Any final questions? | | |
| 1700 | Close | Final agreed commitment from leaders to working together to do this. | |

Table 12 – Example Plan for a Decision Accelerator Workshop

Sandwell Metropolitan Council:

“We’ve been doing this for many years and until LEAN we haven’t really challenged ourselves and seen the time picture”.

DESIGN KEY ACTIVITY 3: “BACK TO THE GARAGE”

PURPOSE

To create the opportunity for rapid design of a new system. It allows a radical redesign of the service, free from the constraints and system conditions existing in the current system.

ACTIVITY DESCRIPTION

Split the team into small groups, or as one group depending on the number of people attending the Decision Accelerator. Ask the team to imagine they resigned from their current role and were setting up their own company. This start-up company is in direct competition to their current organisation/ service and has very little:

- Resources (including staff, buildings).
- Money.
- IT.
- Equipment.

In the group/s design the new service bearing in mind:

- Purpose, Outcomes and Principles agreed earlier.
- The limited resources available.
- It must be better, faster and cheaper than the current system.
- There is only one rule - don't break the law!

In order to do this, ask the team to think about the following questions:

- What is the purpose of the system from the customer's perspective?
- What do they think really matters to customers?
- What are the key steps that really create value for customers?
- What is their design so that they only include the steps that create value for customers?

It would be useful to have these headings pre-written on flipcharts so that the group/s can refer to them as they are doing their design. The Operational & Strategic Leaders will need to help them to be ambitious and apply the principles etc, as they may well want to just recreate the current system. Give them time to think about their design but keep the pressure on!

Design to be fed back and appropriate challenge to commence from others. The challenge has to come from people putting themselves in the ‘customers shoes’. Does the design help deliver the purpose agreed earlier in the Decision Accelerator?

The design may need to be amended after relevant feedback, however resist this unless completely necessary i.e. the design breaks the law.

OUTCOMES AND PRODUCTS

A new prototype design for the delivery of services.

Models & Tools

Change Readiness Model (see Appendix 3)
New Leadership Competencies (see Appendix 4)

*Shropshire County Council:
The Design day for the ‘Hedge to Hedge’ project.*



DESIGN KEY ACTIVITY 4: ADDING FURTHER DETAIL TO THE DESIGN

PURPOSE

To ensure that there is enough detail in the design to allow people to think about how they would begin to prototype it.

ACTIVITY DESCRIPTION

As a whole team, or sub teams, start to think about adding more detail to the design they have co-created. To help them think of their new design end-to-end, ask the following questions:

- What knowledge and/or experience do you need in the team to do the work?
- Identify roles where this knowledge/experience currently rests?
- Work through taking a single demand and work out how many of each role would be required?
- Can you name the people who could perform this role – or who would know who they are?
- Which organisation or department do they work for?
- What equipment, access to IT etc. would they require?

Feedback is to commence once they have added more detail to the design. If it is smaller groups feeding back, the wider group should challenge thinking or answer questions for example on people and equipment etc. No matter what the group dynamic is, always invite challenge/debate to make design the best it can be. Make any amendments necessary after the feedback.

OUTCOMES AND PRODUCTS

A detailed design ready to prototype.



*Nottinghamshire County Council:
Mapping out the ‘Design’ at their Design day.*

DESIGN KEY ACTIVITY 5: CREATE PROTOTYPE PLAN

PURPOSE

To ensure the team identified to prototype the design have everything they need to begin the prototyping process and that leaders understand their role.

ACTIVITY DESCRIPTION

This creates a plan in order to begin the prototype as soon as possible. In order to actually start prototyping the following questions need to be answered:

- Who will be in the prototype team? (These people should be dedicated to the prototype for the duration).
- When can the people start? This should ideally be the next day as any loss of momentum at this stage, i.e. if the work stops and then restarts, will slow down the change significantly as well as knocking enthusiasm built across the team.
- Where are they going to work from? The team should be co-located.
- Do they have explicit permission to do this and learn how best to do it and develop more detailed designs as they go?
- If they meet blockages/barriers, who will have responsibility to assist them?
- How will this be communicated across stakeholder within the organisation and to the public?
- Who is going to operationally lead the prototype/s?
- What will be the measures in the prototype?

When the prototype design is in place, the next questions:

- How are you going to account for it/ agree what has to be spent? The Economic Model that has been created (see Discovery Key Activity 7) will be developed further through Prototyping to capture this.
- How are leaders going to stay involved? (Ensure there is a real commitment to stay involved as they need to own the new design/prototype).
- What is the timeframe of the prototype.
- How will we know that this is a success – agree measures.
- A final agreement from everybody to work together to achieve purpose.

OUTCOMES AND PRODUCTS

A clear plan to start the prototype as soon as possible.

Design Stage Overview:

The outcomes that will have been delivered in the Design Stage are

- A well organised Decision Accelerator event that delivers outcomes.
- Good quality, fast decisions.
- Agreement to prototype a new way of working.
- A detailed design ready to prototype.
- Agreed measures of success.
- Clear plan to start the prototype as soon as possible.

This stage will deliver the design, plan and measures to take into the next Prototyping stage. It will also have created buy-in from Stakeholders to ensure that there is strong commitment to the Prototype and to give it the best possible chance of success.

10. STAGE 4 – PROTOTYPE – “HOW TO” GUIDANCE

- 10.1 The purpose of this stage is to experiment and test the new system design to demonstrate that the desired outcomes can be delivered.
- 10.2 The Prototype stage takes the new way of working created in the Design stage and tests it on the ground. Once the design has been proven to deliver improved performance in this small-scale experiment then it can be expanded in the Implement stage.

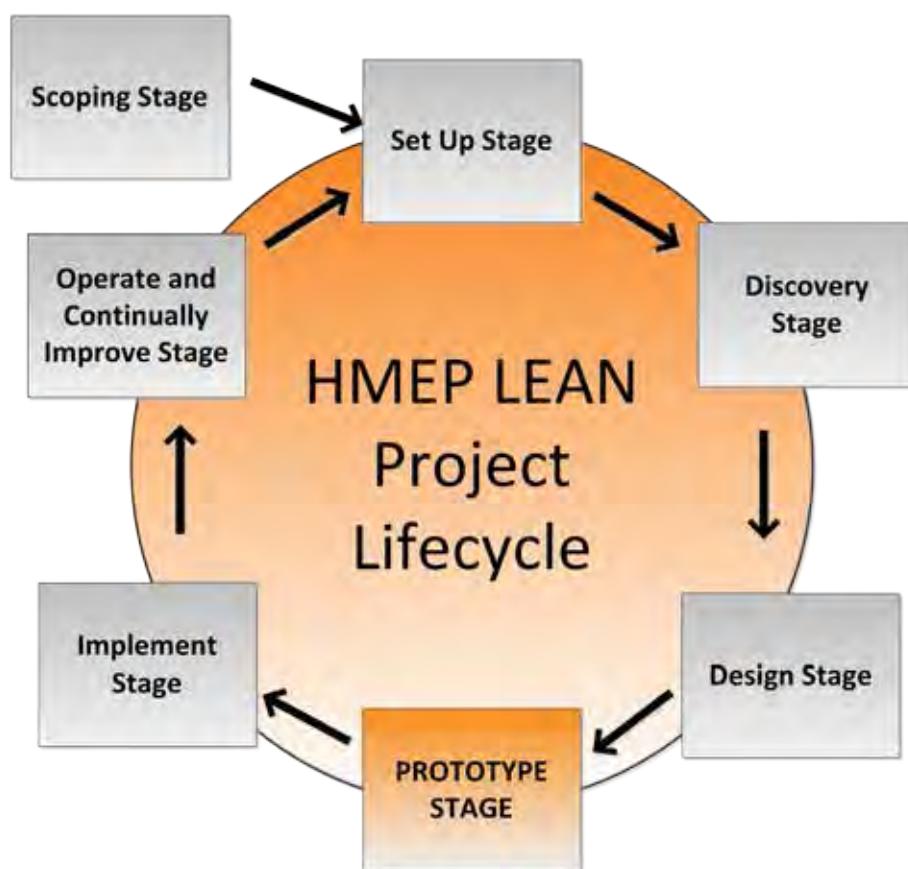


Figure 16 – The Prototype Stage in the HMEP LEAN Project Lifecycle

OH MEP
Highways Maintenance Efficiency Programme

PROTOTYPE STAGE SUMMARY

Purpose: To experiment with the new system design

Key activities:

- Leaders and team ready
- Logistics of the prototype team
- Daily/Weekly review sessions
- Agree measures to evidence improvement
- Take one demand and deal with it – end to end.
- Increase demand through the prototype system
- Collate measures and key learning.
- Constant communication between the change team, leaders and partners

Key to success:

- A robust, stress-tested design
- Confidence across leaders and teams that the new design works

Outcomes & Products:

- New design tested on the ground
- Design proved robust
- Reflect and learn to keep improving the design
- Success of the experiment measured
- Ready to go ahead and implement the design



Patching c/o Leicestershire County Council

10.3 For each of the key activities in the Prototype stage the following elements are outlined:

- Purpose
- Activity Description
- Outcomes & Products
- Tools & Models (where appropriate)



Sandwell Metropolitan Borough Council: The working Prototype of the 'Hedge to Hedge' project.

PROTOTYPE KEY ACTIVITY 1: LEADERS TO BE BRIEFED IN READINESS TO LEAD THE PROTOTYPE STAGE

PURPOSE

To inform and prepare the Strategic Leader, Operational Leader & Stakeholders for the new way of working and to embed their commitment to leading the change process. To inform and prepare the prototype team for the new way of working

ACTIVITY DESCRIPTION

A first discussion should take place to ensure that leaders understand their role in the Prototype stage and are ready to lead it. Their role is to provide constant direction and to remove any barriers that emerge whilst the team is prototyping the new system. They must understand the need to be radical and constantly challenge. Also, they must understand that the prototype may be redesigned many times as the team become familiar with the new way of working. The design has been co-created by the leaders and now they must own the change.

The Operational Leader will brief the prototype team to introduce them to the new way of working. If there are new members of the team who have not been involved in the Discovery or Design stages they will need input about the basics of LEAN Highways and can be Set Up with a mini Discovery experience to buy into the change. The Strategic Leader should provide a clear statement to the group on the importance of this work – and what they can expect from them.

Otherwise the team will require briefing on:

- The outcomes sought from the prototype.
- The principles to work by.
- The design that was created in the ‘Design Stage’
- Agreement on how they will work together, e.g. all one team, dealing with demand end to end.
- It’s a full time commitment.

OUTCOMES AND PRODUCTS

Leaders ready to lead
Prototype team ready to start

Tools & Models

New Leadership competencies (see Appendix 4)
Change Readiness Model (see Appendix 3)

PROTOTYPE KEY ACTIVITY 2: LOGISTICS OF THE PROTOTYPE TEAM

PURPOSE

The purpose of this is to Set Up the right environment for the Prototype team to be able to deliver improvement. This should be Set Up at the beginning of the Prototype and should underpin all of this stage.

ACTIVITY DESCRIPTION

It is important for the prototype team to have a space they can feel comfortable to work in, away from the current system, where they have the right environment for improvement. This helps to prevent them from reverting to old ways of working. The team must include all the skill sets needed for the design and then be given the authority to concentrate on the prototype daily. As members of the team are likely to have never worked in this way before, some barriers may arise when it comes to working together. It is important for the Operational Leader to share the key principles of working to help break these barriers. Principles such as:

- What matters to customers.
- Being open and honest.
- Thinking end-to-end.

Important things to have on the wall in the change team’s work space

Live Flow

As in the ‘Discovery Stage’, when a map of the flow of actual work done in the old system was created, another will be created for the new way of working. This will be a work in progress as the longer the prototype goes on there may be new things added to the design. This can be used as a great visual comparison to the old system when leaders come to get an update from the change team.

Live measure set

As the team start taking more and more demand it is important to keep a record of the measures being delivered by the prototype. For example, how long does it take to deliver a TRO end to end? Having this live data on the wall keeps the team motivated and also is an easy way of displaying how well the prototype is performing compared to the old system.

The ‘Highways Agency North and Humber Area Team - Introduction of Visual Management and Collaborative Planning Tools’ case study (see the case study bank) is a good example of using visual management to monitor performance. They agreed the key measures and used magnetic whiteboards with the aid of red (not on target) or green (on target or better) magnets to see visually at any stage how a scheme was performing.

Track Volumes

The volume of work coming into the system should be tracked to ensure that too much demand isn't let into the system until the team is ready to deal with it. Starting small and increasing demand gradually helps create an understanding of how many people can deal with a certain amount of demand. As demand increases size of the prototype team will need to be increased.

Table 13 – Considerations for the Change Team’s Work Space**OUTCOMES AND PRODUCTS**

The prototype team has the right environment to deliver improvement.

PROTOTYPE KEY ACTIVITY 3: DAILY/WEEKLY REVIEW SESSIONS**PURPOSE**

To provide an opportunity for the prototype team to share what has and what hasn't been working, and to share new ideas about potential ways of working.

ACTIVITY DESCRIPTION

Organise daily or weekly prototype team reviews so everyone can share what they have been doing, and what has worked and what hasn't. It provides the opportunity for people to suggest a better way of working and the change team should not be hindered by the old way of working. They should think radically and understand that different ways of working are possible in the prototype. After all, that is why the prototype is being tested in the first place. The change team should feel comfortable to suggest ideas and be listened to. It is not imperative that these sessions be done each day but at least once a week.

The sessions should be based on data rather than opinion and the opportunity should be taken to make progress visible by putting up:

- The new work design.
- Measures of performance.
- Action Lists.

These daily or weekly sessions are based on the PDCA model (plan-do-check-act) to ‘check’ the measures since the previous session and then ‘plan’ changes to the design based on the evidence then to go and ‘do’ by working differently the next day.

It is during this activity that the individual readiness to move through the stages of change will become apparent. The Stages of Change Model developed by Prochaska and DiClemente can be used to understand where individuals are on their individual change journeys, and to design effective interventions to help them move through the stages.

OUTCOMES AND PRODUCTS

Regular learning sessions
Developed new ways of working in the prototype

Tools & Models

Change Readiness Model (see Appendix 3)
Prochaska and DiClemente - Stages of Change Model (see Appendix 5)
PDCA Cycles (see below)

PDCA Cycles:

The model below is a Plan – Do – Check – Act Cycle (PDCA). This is the learning cycle used to plan to act on the system and create change and then reflect or check what impact the change has had on performance.

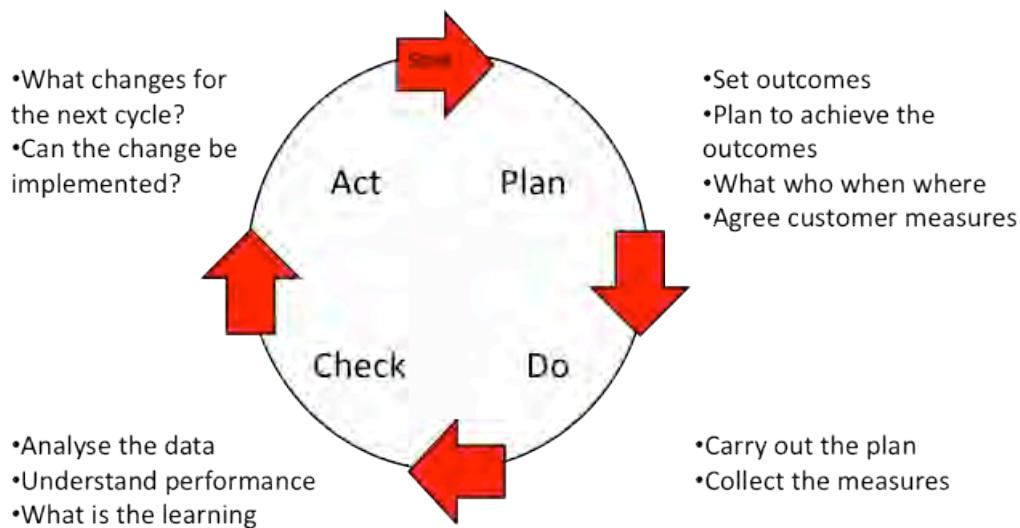


Figure 17 – PDCA Cycle Model

Bradford Metropolitan District Council:

“We used to have too many people working separately in their own little silos and forgetting what they were there for – it feels different now”.

PROTOTYPE KEY ACTIVITY 4: TO AGREE WHAT MEASURES ARE NEEDED TO EVIDENCE IMPROVEMENT AND THAT THE OUTCOMES HAVE BEEN MET

PURPOSE

To have sufficient data to demonstrate the new way of working is better, faster and cheaper.

ACTIVITY DESCRIPTION

Agree the measures that have to be gathered based on purpose and what matters to customers – and the outcomes agreed. These should all be consistent. For example, what matters to customers is a safe, well maintained road network so one of the measures should be how long it takes us to permanently fix a defect (right first time) from when it is first identified. If we were to measure number of potholes fixed (not a customer or outcome measure) it could drive the wrong behaviour into the system e.g. go out and do a temporary fix, then another temporary fix when the first one fails, and so on. It looks like lots of work is going on but actually we are reworking and reworking and not delivering customer outcomes. This activity will add detail to the measures set created in the design phase if more is needed. Measures will also need to test the improvements in efficiency and whether the Business Case has been delivered.

OUTCOMES AND PRODUCTS

Statistical Process Control charts
Complete customer measures set
Other relevant data analysis

Tools & Models

Using Statistical Process Control charts (see Appendix 2)
PDCA Cycles (see Prototype Key Activity 3)

Leicester City Council:

“The HMEP LEAN Toolkit helped us to do what we had been thinking about for ages, but hadn’t actually done”.

PROTOTYPE KEY ACTIVITY 5: TAKE ONE DEMAND TO START WITH AND DEAL WITH IT – END TO END

PURPOSE

To have a clean start to the prototype making sure the team has sufficient knowledge/skill to carry out the new way of working. To have a clear understanding of how to deal with demand through the new design, applying the new principles.

ACTIVITY DESCRIPTION

This is the first day actually doing the work in the prototype system. The whole team works together in taking the first demand/piece of work. The team discusses and agrees how to start doing the work, applying the principles and only doing the value steps. The team should actively challenge each other – the risk is the team fall back into the current way of working which needs to be resisted. The team works together to complete the demand end to end.

Then they take the next demand and repeat the exercise – changing things as they go. If they meet barriers to doing it the way they have designed, they should go immediately to the leader and ask them to help remove the barrier. When they have taken a number of demands as a group, they can then divide if necessary, and start taking demands in smaller teams or as individuals. They record what they have learned.

They should create lists of things to do and agree who is doing them to continue to improve the work. The leader should always be involved so that they can see for themselves, how well it is working and to offer challenge if they think the team is not being ambitious enough. The design needs rechecking to ensure that it still meets purpose from the customer's perspective and that waste steps are minimised. It will usually become apparent that amendments are needed during the prototype, as the design is a work in progress. Roles may also change, or new roles may be created as a result of prototyping.

OUTCOMES AND PRODUCTS

First iteration of new way of working tested on the ground.

Tools & Models

PDCA Cycles (see Prototype Key Activity 3)

PROTOTYPE KEY ACTIVITY 6: INCREASE DEMAND THROUGH THE PROTOTYPE SYSTEM

PURPOSE

To demonstrate the new way of working can work robustly with increased demand, thus showing it could eventually be rolled in throughout the organisation/service.

ACTIVITY DESCRIPTION

When the design is working well the volume of demand going through the prototype can be increased. This allows the stress testing of the design. There will usually be alterations made to the prototype to enable this. This should be encouraged as long as the principles are adhered to and it meets purpose. As more demand is taken more resource will need to be pulled into the team – demand and resource should be balanced as the prototype grows. An example could be in a TRO (traffic regulation order) process where more TROs are now taken into the prototype team.

OUTCOMES AND PRODUCTS

Robustly tested new way of working.

PROTOTYPE KEY ACTIVITY 7: COLLATE MEASURES AND KEY LEARNING. DISCUSS WITH LEADERS AND OTHER STAKEHOLDERS TO PREPARE FOR THE NEXT STAGE “IMPLEMENT THE NEW SYSTEM”

PURPOSE

To have sufficient data to demonstrate the new way of working is better, faster and cheaper.

ACTIVITY DESCRIPTION

When the prototype is proving to deliver better, faster and cheaper results with the increase in demand through the system this needs to be shared with the leaders. For example, if one of the measures was to deliver planned projects on schedule - has it been successful? With the increase in demand throughout the prototype are the results maintained? A second Decision Accelerator will need to be organised to share with the leaders and other stakeholders the success of the measures from the prototype. The idea is to have enough data for the leaders to feel confident in moving to the ‘Implementation’ stage of the change project. A date will need to be organised for this as far in advance as

possible, and it will need to be planned much like the previous Decision Accelerator.

OUTCOMES AND PRODUCTS

Full measures set that demonstrate improvement.

Tools & Models

Event Planning Framework (see Design Key Activity 2)

PROTOTYPE KEY ACTIVITY 8: CONSTANT COMMUNICATION BETWEEN THE CHANGE TEAM, LEADERS AND PARTNERS

PURPOSE

To keep people updated on the progress of the prototype by using a communication plan.

ACTIVITY DESCRIPTION

There should be constant communication between the change team, leaders and the partners so everyone is involved and up to date with the progress of the prototype. Leaders need to own the change and should be involved with every stage of the project. Leaders owning the change and being seen to be involved helps breed confidence among the change team and they will, in turn, feel confident in being able to approach leaders with updates. Also, it allows the leaders to make the rest of the organisation/service aware of the work going on within the prototype. As the change will eventually be getting implemented throughout the business it is vital to keep everyone included. If everyone is not kept engaged it can create an ‘us and them’ mentality.

OUTCOMES AND PRODUCTS

The leaders own the change and the prototype team feel confident in sharing performance data with them.

Prototype Stage Overview:

The outcomes that will have been delivered in the Prototype Stage are:

- New design tested on the ground.
- Design proved robust.
- Reflect and learn to keep improving the design.
- Success of the experiment measured.
- Ready to go ahead and implement the design.

This stage will have developed the detailed design of the new system and tested it against real demand on the ground. This allows it to be improved, proved robust and measured to evidence improvement. The Prototype team will also have developed a new culture and way of working to support the process. The design is now ready to be taken to the next stage and implemented across the whole service.

11. STAGE 5 – IMPLEMENT THE NEW SYSTEM – “HOW TO” GUIDANCE

11.1 The purpose of this stage is for the leaders and teams to implement the new way of working across all areas of the system that had not yet been covered during the prototype phase. The measurement regime should be embedded to ensure that the performance of the system is continually challenged and improved. Included in this stage is the implementation of any changes to roles, structures and ICT.

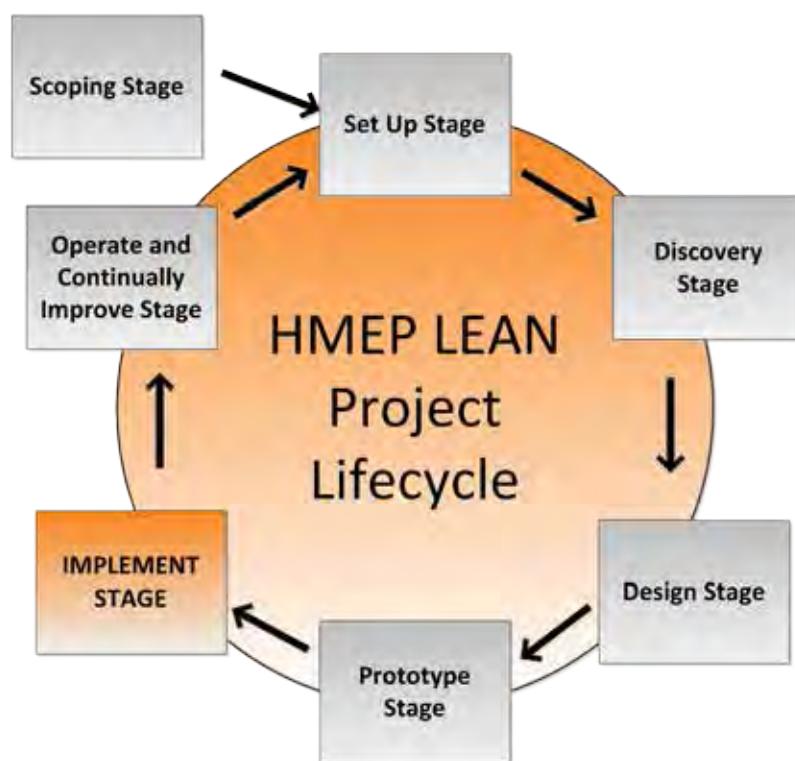


Figure 18 – The Implement Stage of the HMEP LEAN Project Lifecycle

11.2 The Implement stage takes the design that has been tested and proven in Prototyping and implements it across the whole system. Once this is rolled out and everyone is working the new way then the project will be ready to move to the Operate and Continuously Improve stage.

11.3 For each of the key activities in the Implement stage the following elements are outlined:

- Purpose
- Activity Description
- Outcomes & Products
- Tools & Models (where appropriate)

QHMEP
Highways Maintenance Efficiency Programme

IMPLEMENT STAGE SUMMARY

Purpose: To implement the new way of working across the whole system

Key activities:

- Plan the roll in
- Roll in communication
- Roll in – grow the prototype
- Embed measures
- Develop new culture
- Define new capabilities & roles & structures
- Pull ICT to support the new way of working

Key to success:

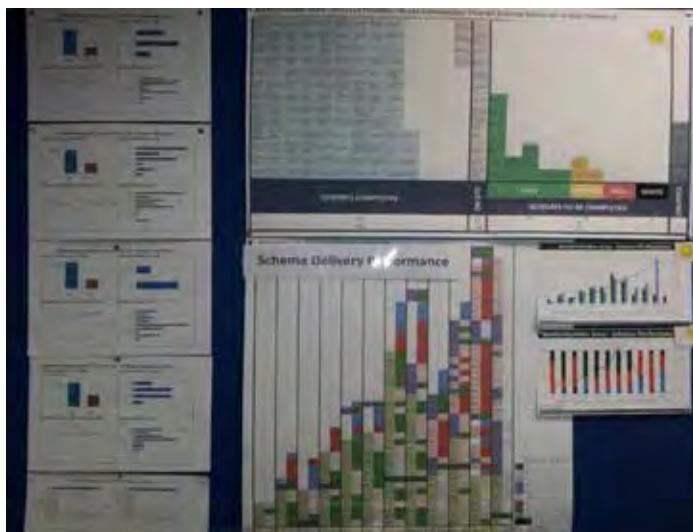
- To make the new ways of working permanent

Outcomes & Products:

- To plan and deliver the roll in
- To get the whole service working the new way
- To embed measurement
- Implementation of any changes to roles, structures and ICT



Working the new way c/o London Borough of Islington



Highways Agency: The visual management of the projects in the new system.

IMPLEMENT KEY ACTIVITY 1: PLAN THE ROLL IN

PURPOSE

To create plans for each area to roll in the new system which ensures a smooth transition and sustainable change. To share learning from the prototypes and get buy in to the benefits of the new system.

ACTIVITY DESCRIPTION

Create a roll in plan to bring in new demands / teams / areas so that the whole system is working in the new way

- The plan should be co-created at a workshop event as it allows all stakeholders to be present in one session, reducing the need for repeats and to ensure a consistent, shared understanding and commitment.
- The session should include the Strategic Leader, Operational Leader, key stakeholders and any of the team who need to contribute to the shape of the plan.

This workshop should include:

- Explanation by the Strategic Leader of why this project was undertaken.
- Recap of the LEAN method and principles that have been applied.
- Recap of learning from the ‘Discovery Stage’ – this should include ‘Who the customer of the system is’, ‘What matters to them’ and ‘What the purpose of the system is’.
- Sharing of the new design and prototype results – this should include the measures to demonstrate how the new system performs against the old.
- Co-creating a plan to roll in the rest of the teams. This needs to include who/what/where & when and ensure that the learning from the prototype is transferred to the new teams. The plan to grow the experiment should take into account the order of roll in e.g. rolling in next geographical areas that adjoin a reactive prototype area or rolling in the next design project.
- The timing should be a phased approach to bring in the rest of the organisation. There should be pressure to bring in all teams as quickly as possible to deliver the benefits of the new way of working and to minimise the time that old and new ways of working are existing in parallel to reduce the risks of an ‘us and them’ way of thinking developing around the prototype. This is balanced by the need to phase the roll in so that there is capacity to help all teams joining the prototype assimilate and learn the new way of working. A ‘big bang’ roll in dilutes the benefits of the new culture and way of thinking so that outcomes are not sustained over time because later joiners do not have a chance to buy in, only to follow a process.

OUTCOMES AND PRODUCTS

Roll in plan.

Tools & Models

Roll in Plan

Roll in plan example - A sample plan is included as a basic example and template to follow

| Who | What | Where | When | Learning from prototype: |
|--|---|---|-------------------------|---|
| Team in South area (not currently part of the prototype) - 1 Technician & 3 gang members | All work streams within scope: <ul style="list-style-type: none"> • Street lighting • Metalworks • NRSWA • Culvert inspections • Safety inspections • Cleansing inspections | South technician's area. <ul style="list-style-type: none"> • Starting on estate roads • Urban roads • Rural roads | 1 st January | The gang will require: <ul style="list-style-type: none"> • Shears • Litter grabs • Sharps box • Hot box • Wheelbarrow |

Table 14 – Roll in Plan Example

IMPLEMENT KEY ACTIVITY 2: ROLL IN COMMUNICATION

PURPOSE

To engage the whole organisation.

ACTIVITY DESCRIPTION

Communication should be ongoing with the whole organisation. This can be via any method that works well in your organisation including emails, intranet, facebook, twitter, drop in sessions or more formal planned sessions. The purpose of the content is:

- To keep sharing outcomes and lessons learned from the prototype and implementation to generate curiosity.

- To minimise the ‘us and them’ barrier that can grow between the prototype team and the rest of the organisation unless there is significant contact and communication planned to overcome this.
- To prepare the whole organisation for when they join the expanding prototype.

OUTCOMES AND PRODUCTS

Communication plan
 Regular communications
 An engaged organisation

IMPLEMENT KEY ACTIVITY 3: ROLL IN – GROW THE PROTOTYPE

PURPOSE

To get the whole organisation working the new way.

ACTIVITY DESCRIPTION

This activity is to implement the roll in plan and to grow the experiment until the whole organisation is working in the new way.

As new team members join the prototype, leaders need to stay close to how the team are working and ensure that the new design and thinking is not diluted. The design should continue to develop as the team continuously improves it but progress can slow at this stage if leaders are not closely engaged. A common risk at this stage is that new members join the team but do not fully buy in to the new design and so revert to how they worked in the old system. To mitigate this:

- Create an initiation session for new members who join the team. This can include the new design, the background and results so far, but should also include some live experience for the new joiner where they go out and experience the issues for themselves and so buy into the change. The experience will depend on the LEAN project but could include mapping an end-to-end flow, interviewing customers about their experiences or identifying ‘before and after’ measures.
- Buddy new members of the team with members who have been through the prototype and can share the new way of working.

The leaders and team should capture, share & embed new ways of working as they develop them so that all in the prototype are clear about the current design as it changes over time.

The team should maintain their regular reflection sessions so that they are all engaged

with continuously improving the design over time.

OUTCOMES AND PRODUCTS

Whole organisation working the new way.

Tools & Models

PDCA Cycles (see Prototype Key Activity 3)

IMPLEMENT KEY ACTIVITY 4: EMBED MEASURES

PURPOSE

To embed the new measures as the normal way of operating

ACTIVITY DESCRIPTION

Measures should be built into the system to ensure ability to assess performance now, but also to monitor over time for continual ‘health check’ and improvement. In this stage the measures that have been established during the prototype need to be ‘hardwired’. This means that they need to become the ‘normal’ measurement for the system. During the small sample in the prototype measures will often be captured on paper, excel spreadsheets and visual management boards, but to make them work for the whole system they need to be more robust and built into the normal reporting processes and IT systems. The new measures should replace (not add to) the previous ways of measuring the system and be used for management decision-making as well as by the team. The measures should look at outcomes across the end-to-end system and so should work across clients and contractors. The measures should be presented in statistical process control charts so that they can be used to understand how the system is changing. This creates measures that drive improvement rather than the traditional comparison with a prior period that has limited potential to learn from.

OUTCOMES AND PRODUCTS

New management reporting
Measures automated from the IT system

Tools & Models

Using Statistical Process Control Charts (see Appendix 2)

IMPLEMENT KEY ACTIVITY 5: DEVELOP NEW CULTURE

PURPOSE

To create an improvement culture.

ACTIVITY DESCRIPTION

As the experiment grows to become normal, leaders need to maintain the challenging thinking and innovation from the prototype phase. The culture needs to be one of ongoing learning and improvement. The key factors necessary to build a group that has high trust and the necessary culture to rapidly grow and learn are:

- Self-assessment – this involves assessing your own abilities and constantly challenging yourself to learn and improve.
- Feedback – seeking feedback from others, colleagues and customers, to understand your performance better and to find areas to develop further.
- Disclosure – sharing your own issues, challenges, concerns and fears which will build trust. Learning can only happen if it is seen as positive to share what doesn't work and seek help.
- Risk taking – being prepared to take a risk to innovate and try new ways of working. Leaders must support and protect this behaviour as if the group takes risks and gets a negative reaction if the results are not perfect first time then they will be unwilling to take further risks.

These behaviours help to build a new culture in the group that will optimise performance and continuously improve. The Highways Agency have introduced the Highways Agency LEAN Maturity Assessment Toolkit (HALMAT) that assesses all elements of LEAN and how they are embedded across the organisation, including the strategy, financial, people and process elements. For further detail the Toolkit can be found at <http://assets.highways.gov.uk/specialist-information/LEAN-helmet?Highways%20Agency%20LEAN%20Maturity%20Toolkit%20version%2021.pdf>

OUTCOMES AND PRODUCTS

Improvement culture embedded.

Tools & Models

PDCA Cycles (see Prototype Key Activity 3)

New Leadership Competencies (see Appendix 4)

HMEP ‘Creating the Culture to Deliver’ Toolkit following the link below:

(<http://www.dft.gov.uk/hmep/docs/toolkits/130920-creating-the-culture-to-deliver-toolkit-issue-sca.pdf>)

London Borough of Islington:

“I’ve been in this game for 30 years and it’s only recently that I’ve enjoyed coming to work - now people thank me and it lifts your day”.

IMPLEMENT KEY ACTIVITY 6: DEFINE NEW CAPABILITIES & ROLES & STRUCTURES

PURPOSE

To formalise roles & structures.

ACTIVITY DESCRIPTION

The new way of working tested in the prototype will often involve teams needing different skills, different roles and different organisation structures. These changes need to be captured, to be formalised and to become the new ‘normal’ way of working.

The Strategic and Operational Leaders should lead a workshop for the Operational Team to begin to describe what functions are required in the new system which in turn describes the capabilities required of these functions, then describes the roles, then describes the structure required which describes what level of change is required now to support this new system. See the ‘Purpose to People’ model below.

Consultation with HR departments and Unions (if applicable) will be needed to create new Job Descriptions & Person Specifications (this will largely depend on the variation of the functions and capabilities of the roles between the old and new systems). This activity is to ensure that roles in the new system are fully implemented along with any contractual changes required. Ideally a representative from HR and Unions (if applicable) should join the project at an early stage as possible so that they can anticipate and support this process. They should also be part of this workshop.

Examples of the changes could be:

- If a Highways department changed from working in specialised silos to a place based approach then the frontline roles would change to become multiskilled to be able to act on anything that they find from hedge to hedge and structures would move from specialism based to geography based teams.
- If a design engineer’s role changed to take on responsibility for the end-to-end project from initiation to implementation.

Changes to functions, as well as to processes, need to be reflected in the contract where services are provided by a supplier. This can be done by going through formal processes

to revise the contract to reflect the new design. In some cases the contract will not need to be changed but the new way of working must be recognised and agreed by the client and the supplier. Client skills, as well as supplier skillsets, will often need to be developed to meet the new way of working.

OUTCOMES AND PRODUCTS

Job Descriptions
Person Specifications
Terms of employment
Organisation structures

Tools & Models

Purpose to People:

Purpose to People

The ‘purpose to people’ model below describes the best approach to redesign, starting with purpose and then designing new roles and structures to meet purpose, rather than structures being arbitrarily based on opinion as can happen in traditional re-organisations. The redesign process is

- First the customer purpose is understood.
- Then the tasks or functions needed to deliver the purpose are created.
- Then the capabilities needed to perform the tasks can be defined.
- Then the new roles can be shaped around the capabilities required.
- Then organisation structures can be built to support the roles.
- Finally, people can be placed in the best place in the structure to deliver the purpose.

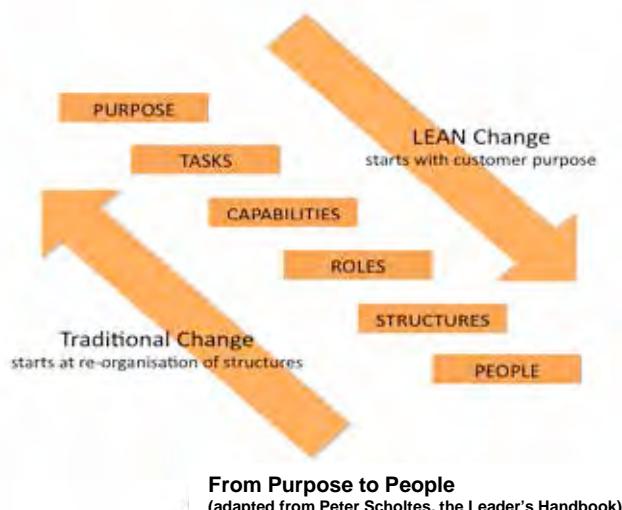


Figure 19 – Approach to change from ‘purpose’ to ‘people’

IMPLEMENT KEY ACTIVITY 7: PULL ICT (INFORMATION & COMMUNICATION TECHNOLOGIES) TO SUPPORT THE NEW WAY OF WORKING

PURPOSE

To ensure that ICT supports the new system.

ACTIVITY DESCRIPTION

ICT is pulled at this stage to make the new way of working more robust and easier to run with larger volumes as the change is implemented. ICT is deliberately left until this stage so that the team is able to be creative and work out what is the right way of working without being limited during prototyping by the scope and pace of change of ICT. Examples could include ICT needing to be developed to:

- Support new end-to-end programme management reporting where the planned maintenance process has been redesigned.
- Send defects identified by inspectors direct to handheld devices with reactive maintenance gangs.
- Map forward programmes from Highways authorities and Utility partners to allow them to spot opportunities to share traffic management.

The operational team, supported by the strategic and operational leads, are tasked to create an ICT process flow of the current system, and what the new ICT flow needs to look like to support the new system. As in ‘Discovery stage’ they should plot the processes – that is to say the high level interactions between operations and ICT in order to fully understand what changes are required to the ICT flow to support the new system. This will also help to sustain the change in minimising the risk of defaulting back to the capabilities of the current ICT.

To do this they will require support from a stakeholder in the organisation with knowledge of the ICT systems. Ideally a member of the ICT team should join the work to understand the customer outcomes that they are trying to achieve and therefore to be creative about how ICT can support the new ways of working.

A plan should then be created so that changes to ICT are delivered in a timely way to help embed the new ways of working.

OUTCOMES AND PRODUCTS

ICT process map
ICT delivery plan

Implement Stage Overview:

The outcomes that will have been delivered in the Implement Stage are:

- To plan and deliver the roll in.
- To get the whole service working the new way.
- To embed measurement.
- Implementation of any changes to roles, structures and ICT.

This stage will have taken the new design and rolled the whole service in so that everyone is now working the new way. To support the new way of working measurement, roles and ICT will have changed. Now that the change is fully implemented the project can move to ‘Operate and Continually Improve’ to ensure that the change is fully embedded and continuously challenged and improved.

12. STAGE 6 – OPERATE & CONTINUALLY IMPROVE – “HOW TO” GUIDANCE

- 12.1 The purpose of this stage is to embed the operation of the new system and for leaders to ensure that effective measurement, learning and improvement are continuous. This stage is the culmination of all the stages that have gone before to create change – it makes sure that the changes are embedded and sustained going forward.

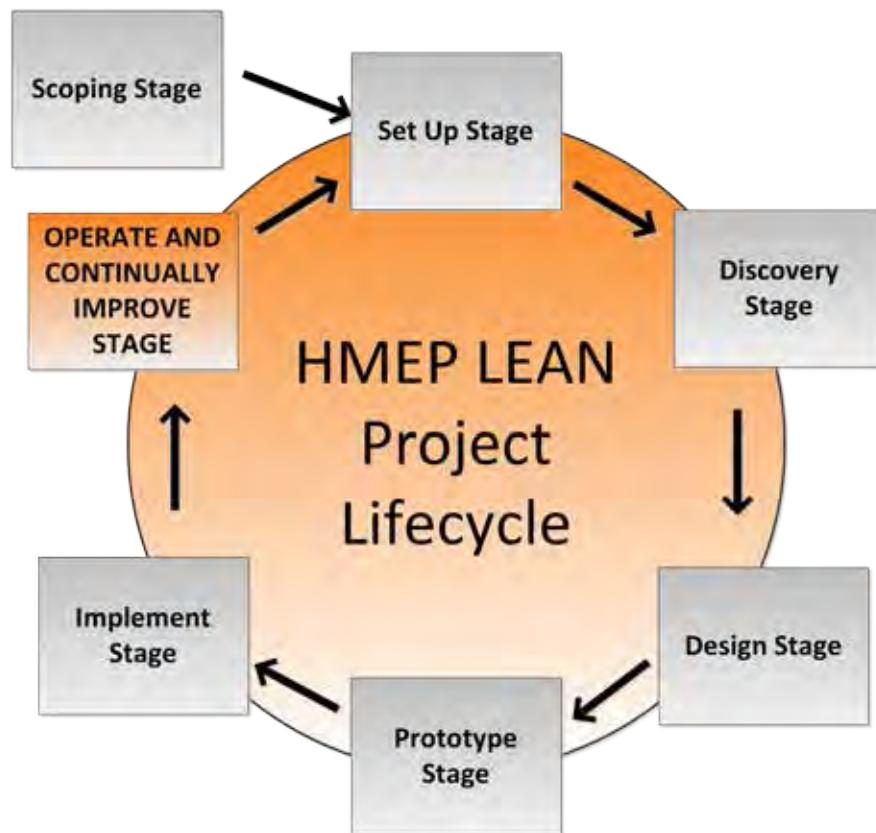


Figure 20 – The Operate and Continually Improve Stage of HMEP LEAN Project Lifecycle



Highways Maintenance Efficiency Programme

OPERATE & CONTINUALLY IMPROVE STAGE SUMMARY**Purpose:** To embed the operation of the new system**Key activities:**

- Review the Learning Cycle
- Stay ahead of the changing environment
- Ongoing leadership development
- Ongoing sponsorship
- Ongoing staff engagement
- Learn from people outside your system
- Share your success
- Repeatable cycle of change: Determine what next?

Key to success:

- Ongoing support and challenge
- Keep it live

Outcomes & Products:

- Embed the changes that you have created
- Keep the improvements live
- Keep developing, learning and improving
- Share your successes
- Agree what to work on next



Operating the System c/o Leicestershire County Council

- 12.2 HMEP products that link in here include the Strategic Review that could be used to review and challenge leading to further change projects. The HMEP product around ‘Building Intelligent Client Capability’ is in development for publication in 2014 and will support the development and embedding of strategic, operational and individual skills which will support the new way of working.
- 12.3 For each of the key activities in the Operate & Continually Improve stage the following elements are outlined:

- Purpose
- Activity Description
- Outcomes & Products
- Tools & Models (where appropriate)

Nottinghamshire County Council:

“We’ve dramatically changed our philosophy, modernised the attitudes of staff and changed our culture. The LEAN process has prepared us for the future in light of increased expectations and reduced budgets”.

OPERATE & CONTINUALLY IMPROVE KEY ACTIVITY 1: REVIEW THE LEARNING CYCLE

PURPOSE

The purpose of this activity is to ensure that the changes are embedded and sustained.

ACTIVITY DESCRIPTION

The Strategic Leader, Operational Leader & Team should keep on top of system performance:

- Regularly come back to the defined purpose of the system, the customer and what matters to them as a test to see if the new system is still performing against purpose.
- Use the PDCA model to keep moving forward through small scale interventions and problem solving by reflecting and learning as a team.
- Plan: Agree an action plan to address any barriers to performance or to get additional outcomes.
- Do: Experiment with the changes and measure them.
- Check: Use the customer measures to understand impact.
- Act: Can this be implemented? What changes for the next cycle?
- Ensure that LEAN is embedded throughout the service. This means the whole service not just the front-line processes. This should include:
 - A LEAN approach built into the strategy and service plans.
 - LEAN skills being a core part of people development.
 - Collaborative working integrated into all relevant work.
 - Using LEAN measurement and understanding variation to drive improvement in all service measures.

It is critical to remember that LEAN isn't just a one-off change project that happens on top of the day job. LEAN is a way of thinking that is the day job.

OUTCOMES AND PRODUCTS

Sustained Change.

Tools & Models

PDCA Cycles (see Prototype Key Activity 3)

OPERATE & CONTINUALLY IMPROVE KEY ACTIVITY 2: STAY AHEAD OF THE CHANGING ENVIRONMENT

PURPOSE

To anticipate external influences that will impact the LEAN project so that the work can be adapted

ACTIVITY DESCRIPTION

The environment will constantly change, so the team will need to stay ahead by:

- Horizon scanning to understand what is coming up in the Region or elsewhere in the Council such as new policies, new projects or new IT that could affect the LEAN project.
- Understand national influences that could impact the way of working such as new legislation.
- Understand changing customer expectations over time e.g. expecting to access service online or expecting to have more control over their customer experience.
- Understand how customer demand changes over time and how the system needs to respond to meet the new demand profile.

OUTCOMES AND PRODUCTS

Outcomes maintained as environment changes.



*London Borough of Islington:
Operatives receiving 'live'
requests for service using
personal digital assistants.*

OPERATE & CONTINUALLY IMPROVE KEY ACTIVITY 3: ONGOING LEADERSHIP DEVELOPMENT

PURPOSE

The purpose of this activity is to practice and develop LEAN leadership skills.

ACTIVITY DESCRIPTION

This activity is for leaders of the change to seek out opportunities for continual learning and development of their LEAN leadership skills. This could include:

- Deepening LEAN understanding through reading. ‘Fourth Generation Management’ by Joiner or ‘The Leaders Handbook’ by Scholtes are recommended.
- Learning more about the psychology of change to be able to support people more effectively as they change. ‘Changing for Good’ by Prochaska & DiClemente (interpreted in the Stages of Change Model) or learning more about Myers Briggs personality types are recommended.
- Developing the ‘New Leadership Competencies’ by reflecting on current style and practicing new competencies as outlined in Appendix 4. LEAN leadership isn’t about sitting in an office, managing by numbers – it is about getting out into the work and questioning and challenging the status quo, it is about putting customer purpose at the centre of everything, it is about using measures to drive improvement and it is about understanding and motivating staff.
- Seeking regular feedback & challenge from customers. This could be through:
 - Being out in the work and asking open questions of customers.
 - Dropping in to where service is delivered to customers and listening to their concerns.
 - Attending customer forums or neighbourhood groups.
 - Customer questionnaires – particularly using free text to understand their real issues.
 - Seeking feedback & challenge from colleagues and the critical friend to support your development.
 - Benchmarking through HMEP using CQC (customer, quality and cost) measures. This can be used to create a conversation across Authorities that may have similar demographics but have different results.

OUTCOMES AND PRODUCTS

Enhanced leadership.

Tools & Models

New Leadership Competencies (see Appendix 4)

Prochaska and DiClemente - Stages of Change Model (see Appendix 5)

**OPERATE & CONTINUALLY IMPROVE KEY ACTIVITY 4:
ONGOING SPONSORSHIP****PURPOSE**

Ongoing Leadership engagement

ACTIVITY DESCRIPTION

The Strategic & Operational leaders should:

- Review key stakeholder engagement on a regular basis.
- If key people change jobs and new stakeholders come into the area – Set Up an introduction to the change journey, supported by some time out in the work, for the new stakeholder to experience and understand the way of working.

OUTCOMES AND PRODUCTS

Ongoing Leadership engagement.

**OPERATE & CONTINUALLY IMPROVE KEY ACTIVITY 5:
ONGOING STAFF ENGAGEMENT****PURPOSE**

To empower and engage staff on an ongoing basis so that their feedback continues to be heard and is used to keep improving the new way of working.

ACTIVITY DESCRIPTION

This activity is about the leaders keeping open channels of communication with staff. Relationships of trust are developed in the discovery stage and need to be worked on through regular dialogue and challenge so that staff continue to feel that they can feed ideas and issues into the LEAN project. If leaders do not actively ask to hear about issues employees can begin to feel outside of the LEAN project and can feel uncomfortable

voicing critical opinions that are vital for learning.

OUTCOMES AND PRODUCTS

Ongoing staff engagement & voicing of opinions.

OPERATE & CONTINUALLY IMPROVE KEY ACTIVITY 6: LEARN FROM PEOPLE OUTSIDE YOUR SYSTEM

PURPOSE

Support & challenge to achieve better outcomes.

ACTIVITY DESCRIPTION

To support LEAN learning there are a variety of external peers and experts available:

- Peer support from leaders of other organisations who are going through or have been through similar changes. The solutions that they have created will not succeed if dropped into another authority as so much of the change is around people believing in the outcomes because they have co-created them. However there will be much to learn from how they have used the method as well as what worked and what didn't in their experience. This could include organisations such as the Highways Agency who have done much to embed a LEAN way of working throughout their supply chain, or other departments in your Council that have close links to the Highways Service.
- HMEP are encouraging collaborative groups and conversations across the sector e.g. through groups such as APSE (Association for Public Service Excellence) and ADEPT (Association of Directors of Environment, Economy, Planning & Transport).
- Critical friend support from expert third parties or consultants to challenge and support leaders to achieve even better outcomes.
- Joining or setting up an action learning set. These are groups of leaders using LEAN methodology to improve their areas who get together on a regular basis to exchange ideas, share experiences and solve problems together. These groups are successful when all participants come prepared to share their experiences honestly, warts and all, rather than to present a shiny picture of their successes.
- Use the wide range of HMEP resources available. There are many relevant Toolkits and cases studies, referred to throughout this Toolkit, that can support improvement.

OUTCOMES AND PRODUCTS

Continual support & challenge to achieve better outcomes.

OPERATE & CONTINUALLY IMPROVE KEY ACTIVITY 7: SHARE SUCCESS

PURPOSE

To share the success that has been achieved

ACTIVITY DESCRIPTION

This activity is about recognising and sharing the successes achieved from the LEAN project. The team should come together to reflect on the overall experience – to share their successes and to reflect on lessons learned. This learning can be used to make future change more successful and to help and inspire others embarking on similar projects. Successes could be shared through:

- Writing a case study to share internally across Highways and the rest of the Organisation. This could be published through an intranet site or Council magazine. The HMEP case study template can be used to structure this (see case study bank).
- Running a workshop to communicate the results and method to others who are interested and could benefit from taking this approach.
- Writing a case study or article to share externally. This could be to share with other authorities using the HMEP LEAN toolkit, to publish in industry magazines, to publish in local or national newspapers, or to share on blogs or on the web.
- Presenting findings at conferences with peers.
- Putting the results forward for relevant awards.
- Using the HMEP network to collaborate and share learning.

OUTCOMES AND PRODUCTS

Success shared
Case Study
External communications
Awards



*Nottinghamshire County Council:
Gathering meaningful data to measure performance and continually improve.*

OPERATE & CONTINUALLY IMPROVE KEY ACTIVITY 8: REPEATABLE CYCLE OF CHANGE: DETERMINE WHAT NEXT?

PURPOSE

To keep on using LEAN to improve performance.

ACTIVITY DESCRIPTION

Once the initial changes have been made and embedded, the method can be used to create further improvements.

- Stakeholders and leaders should come together to agree what to tackle next using the method and experience that they have developed.
- Future projects could be further improvements in the same area of Highways, elsewhere in Highways, a whole-place approach, or beyond.
- For any area chosen, go back to the Scoping and Set Up stages and repeat the HMEP LEAN project lifecycle.

OUTCOMES AND PRODUCTS

Agree new areas to tackle
Further improvement

Operate & Continually Improve Stage Overview:

The outcomes that will have been delivered in the Operate & Continually Improve Stage are:

- Embed the changes that have been created.
- Keep the improvements live.
- Keep developing, learning and improving.
- Share successes.
- Agree what to work on next.

You will now have successfully created significant improvements that will sustain in the future. You are ready to work on your next LEAN project!

13.LESSONS LEARNED OVERVIEW

13.1 The lessons learned overview is critical as it highlights the important things to be conscious of throughout a whole change project – these are the things that will cause projects to fail if they are not paid attention to. This overview has been created from years of experience and testimony from authorities that have been involved in LEAN Highways transformational projects, as well as directly from the 4 pilots who have tested the HMEP LEAN Toolkit on real projects.

- **Be really clear about the purpose** – It is vital for everyone to be clear and in agreement of what the purpose of the project is, but also what the purpose of the organisation/service is. This comes from standing in your customer’s shoes and really understanding what it is they want. Failing to do this may result in processes being kept or installed that do not create any value for the customer and lock cost into the system.
- **Understand what matters to customers** – This is key in helping design services that create value, are as simple as possible and eradicate anything that does not deliver the customer outcome.
- **Get the right stakeholders involved** – The wider that you spread the net, the more significant change you can make. This often means engaging external partners such as utilities - a common example will be client and contractor working together. External stakeholders can be harder to engage but unless you can break out of the silos and change the whole end-to-end system you can really limit the outcomes that will be achieved. Keep all the key stakeholders actively engaged throughout the project.
- **Pull support from your critical friend** – For anything but the most simple process change, external challenge will make a big difference to your outcomes. If you get a fresh perspective it will help to challenge and highlight the issues in the system. The LEAN method has been used for many years in Highways and there is a large pool of experience available for support – leaders from the pilots, leaders from the case studies or consultancies will use their experiences to get the best possible outcomes.
- **All stakeholders are clear on what they need to do to make this a success** – Everybody involved with the change project has to know exactly what their role is so there is no confusion further down the line and so that they understand what is expected of them and of each other. Be clear up front about how much time commitment this will involve and be realistic about how hard it will be for leaders to free up the time needed.

- **Leaders and teams working together to own the change** – Breaking the barriers and silos that exist is needed to make significant change. Everyone must be part of creating the new way of working so that they own it – telling people the answer will not create change that sustains because people won’t believe in it.
- **Build sufficient dissatisfaction to overcome resistance to change** – With any change, resistance will exist. It is imperative that enough evidence/data is gathered on the current system to help stakeholders see for themselves how the system is performing from a customer perspective. The quality of the evidence is critical – hard numbers are needed to show the waste and to build the case for change. This helps build dissatisfaction and minimise resistance to change.
- **Dealing with change** – As above, some people will always be more accepting of change than others. Within the toolkit there is a change readiness model that shows different stages of acceptance and different methods in which to help people move towards full acceptance. It is something to be fully aware of so that resistance can be recognised and tackled as early as possible.
- **High challenge** – Always challenge thinking whether it is your own or somebody else’s. It is vital that open and honest conversations are had with one another to try and create the best outcomes for the project.
- **Leaders taking ownership of the change project** – If the leaders do not own the change they can disconnect with the team so it is important to keep them engaged so they are fully involved. If not, this could have a negative affect on the outcome of the project.
- **A robust, stress-tested design** – When the redesign happens it is important to prototype - starting small and working up to taking a high volume of demand. Really test the design to make sure it is working better than the current system before choosing to implement it.
- **Confidence across leaders and teams that the new design works** – Data is needed to prove the redesign works. By gathering measures that can show it is operating better than the current system with a high enough level of demand, the leaders and the team will be assured that the redesign is working.
- **To make the new ways of working permanent** – If there is acceptance of the redesign and it is working better than the current system, it has to be implemented throughout the service. Do not revert back to ways of working from the current system. Remember, these were ‘designed out’ in the design stage of the project, as they were not creating value for the customer and building in cost.

- **Ongoing support and challenge** – Whether it is with the critical friend or just by speaking to other authorities that have had experience of LEAN. Seek support and challenge from others or it is possible to get stuck in a way of working rather than keeping improving.
- **Keep it live** – Continuously reflect and learn by measuring performance to make sure the work done is still being produced to the same standard or better. If performance drops off then look into what is causing this and create a strategy for improvement. This could mean going back to demand analysis, flow mapping etc to really understand how and why performance is deteriorating.
- **IT** – IT that has been developed for the current system may not work effectively with the redesign. It may become apparent that the IT is preventing the team from providing the most effective and efficient way of working that creates value for the customer. This is something to bear in mind as it can create an opening for reverting back ways of working in the current system.

APPENDIX 1 – STAKEHOLDER MANAGEMENT

Stakeholder Management

The purpose of stakeholder management is to:

- 1) Identify stakeholders and;
- 2) Gain their support for proposed changes.

The methodology described in this appendix describes evaluating stakeholders based on their level of influence and the level of support required from them. This analysis is then used to design how to best move stakeholders to a position of strong support.

Task 1 – Identify Stakeholders

Identify all potential stakeholders (see table below). Stakeholders are defined as individuals and/or groups who have a stake in the outcome of the change because they will be affected in some way or can influence the success of the change.

Task 2 – Determine stakeholder’s level of interest and influence

Having identified potential stakeholders, assess their levels of influence and interest based on current knowledge.

Place stakeholders in the appropriate place in the Influence/Interest model below. From this baseline assessment, plans should be developed to move them to the position required for the change to be a success. (Or maintain them in this position if they are already in the required position).

Task 3 – Determine levels of impact on stakeholders

Having identified potential stakeholders it is useful to explore the level of impact on both their socio and technical system that the change will have. This assessment will help to appropriately design stakeholders into the change project.

Task 4 – Determine stakeholder’s levels of support

Having started to work with stakeholders it is of value to assess their levels of support for the change. This support can be usefully mapped using the same model as described previously in Task 2, as it shows both influence and support levels. Having assessed the levels of support, then design how best to work with stakeholders to move them to the required position, or maintain them in that required position.

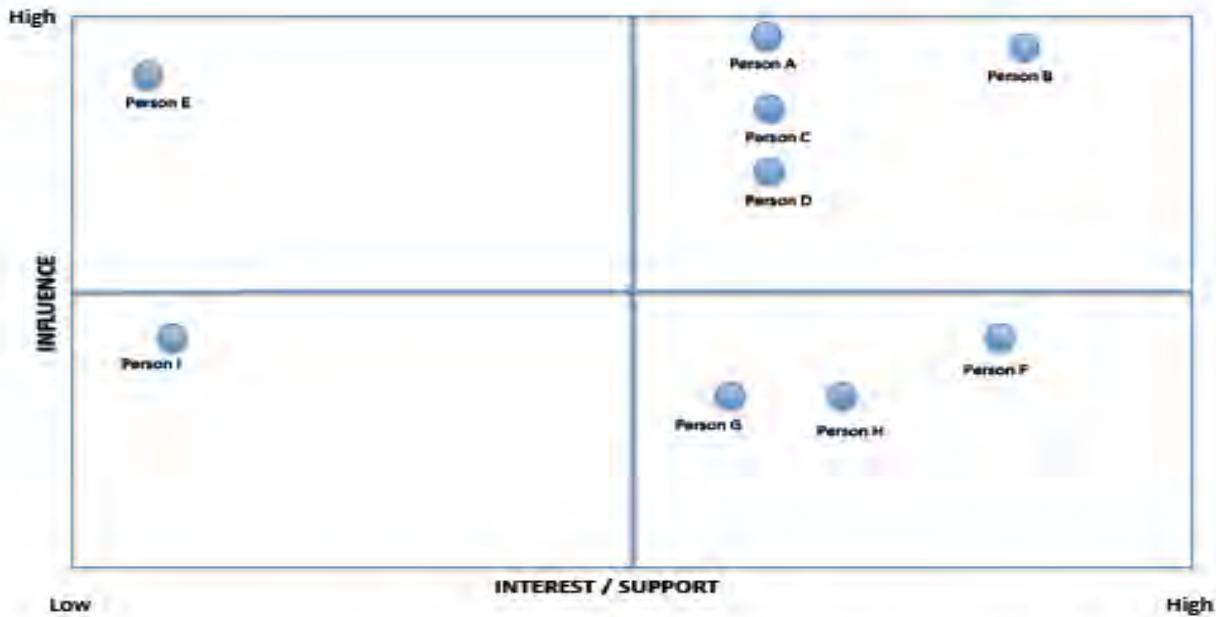


Figure 21 – Stakeholder Map

The following scoring may be helpful when assessing support levels and can be included in the mapping onto the model.

- Completely against it happening (-2).
- Have some concerns and reluctance (-1).
- Let it happen (0).
- Help it happen (+1).
- Make it happen (+2).

Task 5 – Develop stakeholder change plans and tactics

Having assessed the level of support for each stakeholder it is then useful to spend some time understanding the level of support that is required for the change to succeed, and to then design how best to work with the stakeholder to move them to the required position, or maintain them in that required position.

The types of intervention to maintain or move stakeholder support will include:

- Helping them to experience the scale of the opportunity available by designing them into the learning that is being undertaken by the team in Scoping and Discovery stages.
- Engaging them in the Design stage so that they can contribute to the co-creation of the new system.
- Designing them into the reflection and learning sessions in the Prototype stage.

Appendix 5 shows in more detail how to identify, and then move on, individual stakeholders based on where they are in their own change journey.

APPENDIX 2 – USING STATISTICAL PROCESS CONTROL CHARTS

Using Statistical Process Control Charts

The advantage of using a Statistical Process Control (SPC) Chart is to understand the performance of a system over time. This shows if there are underlying trends, if the system is predictable, and the degree of variation that exists in the system.

SPC charts can be used to understand performance or volumes of input and output from a system. They can be used to look at measures such as end-to-end times on design projects, % of output that meets a quality criteria, the end-to-end (E2E) time from a customer placing a demand to the demand being satisfied, or if a resurfacing project has been delivered on time.

SPC charts plot actual performance or demand over time and from this data they calculate the following:

- The *average performance* during the time period.
- The *upper control limit* during the time period. The upper control represents the upper limit that should normally be expected from the system based on the data available. There may still be data points that fall beyond the upper control limit but these are considered to be outliers.
- The *lower control limit* during the time period. The lower control represents the lower limit that is normal based on the data available. There may still be data points that fall beyond the lower control limit but these are considered to be outliers.

The charts below illustrate these for a real example.

For a system that is ‘in control’ and predictable (which most are) there will be relatively few data points that are outside of either the upper or lower control limits. Much can be learned about the performance of a system by analysing why performance has varied and then designing interventions to predictably improve performance.

There are a number of proprietary software packages available that will create SPC charts, but it is also possible to create the charts using Excel. Whether using Excel or a proprietary software package it is important to sort your data into date order.

An SPC chart can be used to understand the performance of any part of the Highways system, from maintenance to new build schemes. The extracts below have been taken from a Traffic Regulation Order (TRO) system. The authority from whom this data has been extracted measured the end-to-end time from when they started work on delivering the TRO and this is shown below.

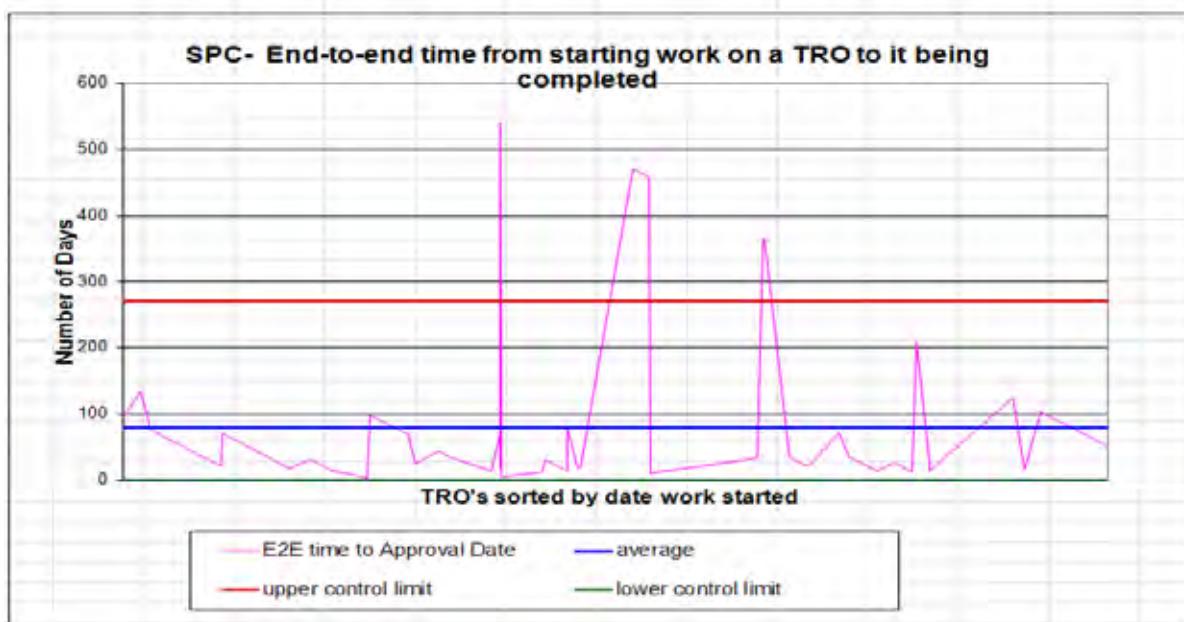


Figure 22 – Example statistical process control chart and data – measuring from date work started

The data shows a system where performance is variable with an average time to complete of 79 days, an upper control limit of 272 days, and most of the TRO's are completed more quickly than the average.

The Members from the authority continually complained about the TRO system, suggesting that it took for ever to get a TRO completed. This was not wholly supported by the data above, but when we measured the end-to-end time from when the TRO was requested a very different picture emerged, which is shown below.

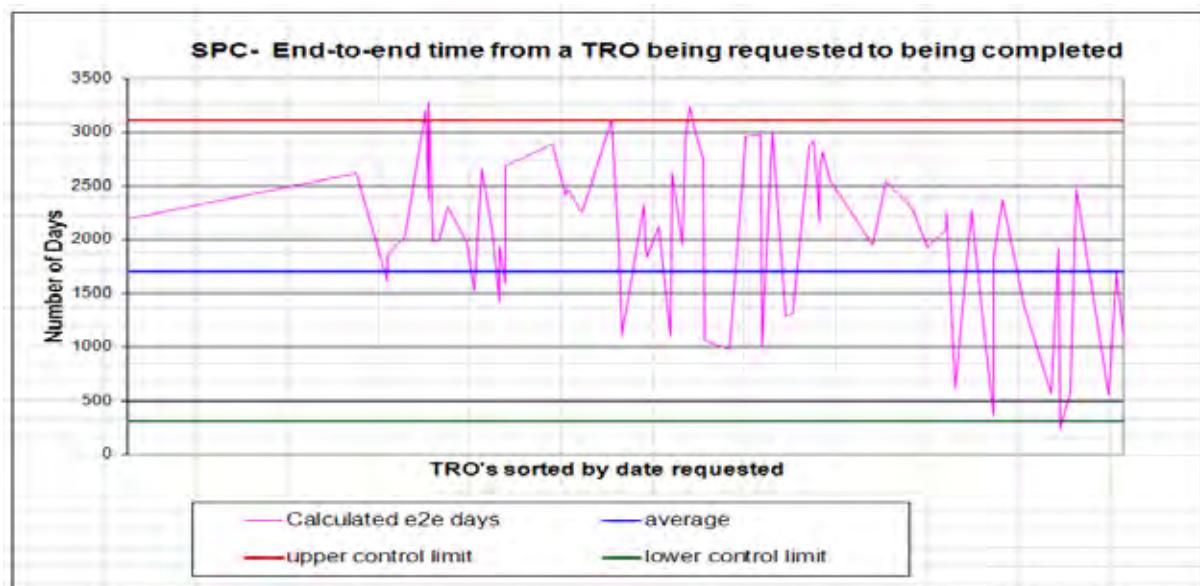


Figure 23 – Example statistical process control chart and data – measuring from date requested

The data now shows a system where it takes an average of 1708 days to complete a TRO (more than 4.5 years), the upper control limit is 3106 days and the lower control limit is 310 days. The fastest that a TRO could be expected to be complete in this system is 10.5 months. When the data is looked at in this way it is perhaps not surprising that Members were dissatisfied, and it provides a good example of how SPC charts can make the real performance of a system visible.

| Date to Network Manager | E2E time to Approval Date | variation | average | upper control limit | lower control limit |
|-------------------------|---------------------------|-----------|------------|---------------------|---------------------|
| 01/02/2010 | 99 | | 79 | 272 | 0 |
| 01/02/2010 | 99 | 0 | 79 | 272 | 0 |
| 01/02/2010 | 99 | 0 | 79 | 272 | 0 |
| 15/02/2010 | 134 | 35 | 79 | 272 | 0 |
| 23/02/2010 | 77 | 57 | 79 | 272 | 0 |
| 16/03/2010 | 56 | 21 | 79 | 272 | 0 |
| 19/03/2010 | 53 | 3 | 79 | 272 | 0 |
| 25/03/2010 | 47 | 6 | 79 | 272 | 0 |
| 01/04/2010 | 40 | 7 | 79 | 272 | 0 |
| 20/04/2010 | 21 | 19 | 79 | 272 | 0 |
| 21/04/2010 | 72 | 51 | 79 | 272 | 0 |
| 14/06/2010 | 18 | 54 | 79 | 272 | 0 |
| 01/07/2010 | 33 | 15 | 79 | 272 | 0 |
| 08/07/2010 | 26 | 7 | 79 | 272 | 0 |
| 19/07/2010 | 15 | 11 | 79 | 272 | 0 |
| 30/07/2010 | 11 | 4 | 79 | 272 | 0 |
| 16/08/2010 | 4 | 7 | 79 | 272 | 0 |
| 18/08/2010 | 99 | 95 | 79 | 272 | 0 |
| 17/09/2010 | 69 | 30 | 79 | 272 | 0 |
| 23/09/2010 | 26 | 43 | 79 | 272 | 0 |
| 12/10/2010 | 44 | 18 | 79 | 272 | 0 |
| 20/10/2010 | 36 | 8 | 79 | 272 | 0 |
| 23/11/2010 | 14 | 22 | 79 | 272 | 0 |
| 30/11/2010 | 70 | 56 | 79 | 272 | 0 |
| 30/11/2010 | 20 | 50 | 79 | 272 | 0 |
| 01/12/2010 | 541 | 521 | 79 | 272 | 0 |
| 02/12/2010 | 68 | 473 | 79 | 272 | 0 |
| 02/12/2010 | 5 | 63 | 79 | 272 | 0 |
| 04/01/2011 | 13 | 8 | 79 | 272 | 0 |
| 06/01/2011 | 33 | 20 | 79 | 272 | 0 |
| 24/01/2011 | 15 | 18 | 79 | 272 | 0 |
| 24/01/2011 | 80 | 65 | 79 | 272 | 0 |
| 01/02/2011 | 20 | 60 | 79 | 272 | 0 |
| 03/02/2011 | 19 | 1 | 79 | 272 | 0 |
| 18/03/2011 | 470 | 451 | 79 | 272 | 0 |
| 30/03/2011 | 458 | 12 | 79 | 272 | 0 |
| 01/04/2011 | 11 | 447 | 79 | 272 | 0 |
| 25/06/2011 | 34 | 23 | 79 | 272 | 0 |
| 25/06/2011 | 34 | 0 | 79 | 272 | 0 |
| 30/06/2011 | 366 | 332 | 79 | 272 | 0 |
| 01/07/2011 | 365 | 1 | 79 | 272 | 0 |
| 21/07/2011 | 36 | 329 | 79 | 272 | 0 |
| 21/07/2011 | 36 | 0 | 79 | 272 | 0 |
| 01/08/2011 | 25 | 11 | 79 | 272 | 0 |
| 02/08/2011 | 24 | 1 | 79 | 272 | 0 |
| 03/08/2011 | 23 | 1 | 79 | 272 | 0 |
| 05/08/2011 | 21 | 2 | 79 | 272 | 0 |
| 30/08/2011 | 72 | 51 | 79 | 272 | 0 |
| 08/09/2011 | 36 | 36 | 79 | 272 | 0 |
| 30/09/2011 | 14 | 22 | 79 | 272 | 0 |
| 14/10/2011 | 27 | 13 | 79 | 272 | 0 |
| 28/10/2011 | 13 | 14 | 79 | 272 | 0 |
| 01/11/2011 | 209 | 196 | 79 | 272 | 0 |
| 11/11/2011 | 25 | 184 | 79 | 272 | 0 |
| 11/11/2011 | 14 | 11 | 79 | 272 | 0 |
| 17/01/2012 | 126 | 112 | 79 | 272 | 0 |
| 27/01/2012 | 17 | 109 | 79 | 272 | 0 |
| 08/02/2012 | 104 | 87 | 79 | 272 | 0 |
| 05/03/2012 | 78 | 26 | 79 | 272 | 0 |
| 19/03/2012 | 67 | 11 | 79 | 272 | 0 |
| 02/04/2012 | 50 | 17 | 79 | 272 | 0 |
| Average | | 79 | | | |
| | | | 72 | | |
| | | | 2.66 | | |
| | | | 193 | | |

Figure 24 – Raw data table

The following table describes the calculations in Excel, as calculated in the raw data table above:

| SPC Element | How Calculated |
|--------------------------------|---|
| Average Performance | Calculated using the AVERAGE function in Excel for all of the records being analysed. The format is =AVERAGE(cell1:cell99) where cell 1 and cell 99 are the range of cells where the individual performance or demand data is held for the records being analysed For this data set this is 79 days average end-to-end time. |
| Individual Record Variation | Is the performance or demand variation between this record and the previous record. This is calculated as an absolute number not whether it is a positive or negative movement. The format is =ABS(cell2-cell1) where cell 2 and cell 1 hold the performance data for records sorted into start date sequence. |
| Average Variation | Calculated using the AVERAGE function in Excel for the individual variations for all of the records being analysed. The format is =AVERAGE(cell1:cell99) where cell 1 and cell 99 are the range of cells where the individual variation data is held for the records being analysed. For this data set this is calculated as 72. |
| Statistically Normal Variation | Calculated by multiplying the Average Variation by 2.66 For this data set this is 193. (=72*2.66) |
| Upper Control | Calculated by adding together the Average Performance and the Statistically Normal Variation For this data set this is 272 days (=79+193) |
| Lower Control | Calculated by subtracting the Statistically Normal Variation from the Average Performance For this data set this is 0 days (=79-193, however this gives a minus number which is meaningless for a number of days, so this is shown as zero) |

Table 15 – Statistical process control chart calculations in Excel

APPENDIX 3 – CHANGE READINESS MODEL

Change Readiness Model

One of the most significant inhibitors to change is the attitude of people – the people in the system that is changing have often contributed to creating the original system, or are rewarded for their position in the system. The HMEP LEAN project lifecycle is designed to create the maximum opportunity to overcome the resistance to change that will exist in the system. It does this by:

- Ensuring that the people who lead and work in the system are involved in the project. People believe in that which they create and this ownership has a massive impact on the probability of the project succeeding.
- Using data not opinion to challenge the status quo and to measure how well the new system works.
- Giving people live experience of the current and new systems – so that they really understand for themselves, not because they have been told by somebody else.

The following simple model describes what has to be present for people to change. The HMEP LEAN project lifecycle is designed to create these conditions for change. In addition the model can be used to reflect on whether these conditions are present, and if not, then to do more to create them.

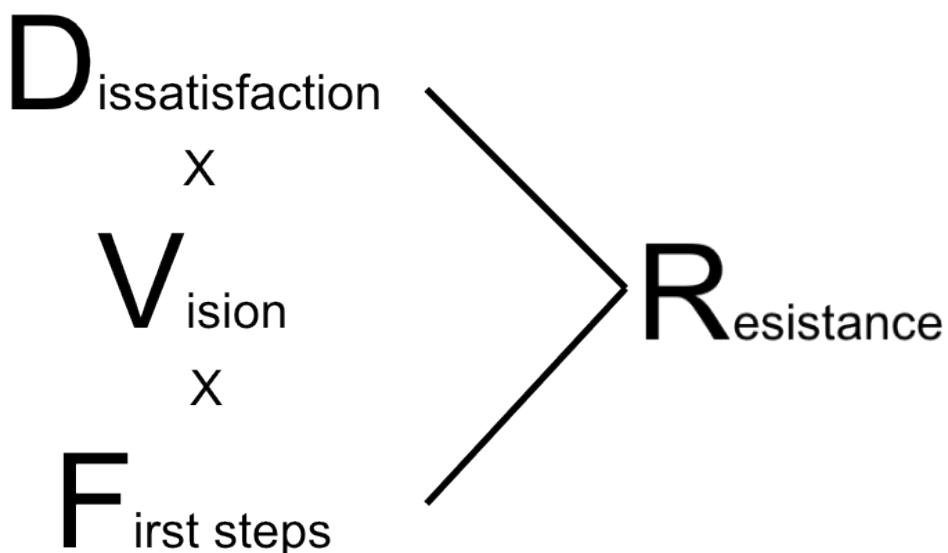


Figure 25 – Change Readiness Model

The model describes that in order for change to happen there must be sufficient of the following present to overcome the resistance to change:

- **Dissatisfaction** with how things are today – this is built during the Discovery stage (see section 8).
- A strong **Vision** for how things can be – this is built during the Design stage (see section 9).
- An understanding of the **First steps** that will deliver the Vision – this is initially built during the Design stage and then refined through the Prototype and Implement stages (see sections 9 to 11).

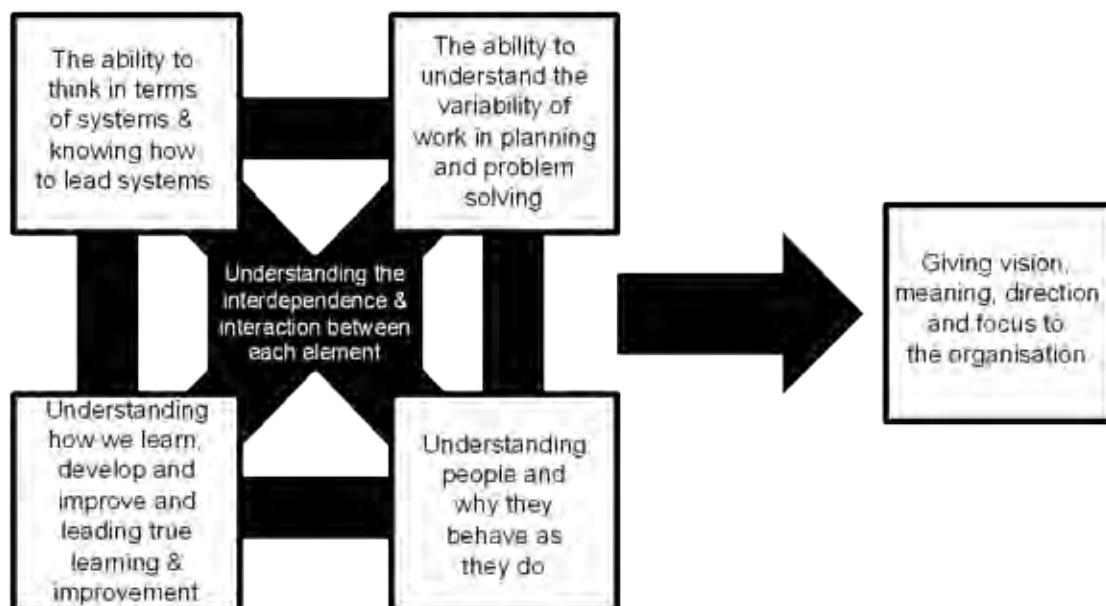
APPENDIX 4 – NEW LEADERSHIP COMPETENCIES

New Leadership Competencies

The HMEP LEAN Toolkit introduces a new set of leadership competencies that will help to deliver the LEAN project, and to lead differently across the Highways Service. This applies to the Strategic Leader, the Operational Leader and any other stakeholders who are in a leadership role. Leadership is a huge subject in its own right and the following further reading is recommended:

- ‘The Leader’s Handbook’ by Peter Scholtes and;
- ‘Fourth Generation Management’ by Brian Joiner.

The following diagram introduces six leadership competencies – This was originally developed by W Edwards Deming and further developed by Peter Scholtes.



The New Leadership Competencies
(Peter R Scholtes, The Leader’s Handbook)

Figure 26 – New Leadership Competencies

The new leadership competencies are described below:

The ability to think in terms of systems and knowing how to lead systems

This relates to thinking about and leading an organisation as a system rather than as separate parts. It means leading people to:

- Be clear about the purpose of the system from the perspective of the customer.
- Understand the types, volumes and frequencies of demand placed on the system.
- Understand the flow of work across organisational and team boundaries.
- Understand how well the system delivers its purpose.

The ability to understand the variability of work in planning and problem solving

This relates to leading people to understand that not all work is the same and therefore performance levels can vary depending on the variable complexity of work, and that a ‘one size’ fits all solution is not always practical.

The job of the Leader in this context is to lead people to understand the causes of variation and to then create systems that are flexible enough to deal with the variation. An example would be the variation in the end-to-end time on a resurfacing project. By studying the end-to-end times using Statistical Process Control Charts as described in Appendix 2 it is possible to understand what normal levels of variation are, that can then be planned for, and to question why performance levels vary to the point that root cause can be identified e.g. the project was delayed to align with planned utility work in the road.

Understanding how we learn, develop and improve and leading true learning and improvement

In this context the job of the Leader is to create an environment where:

- People are encouraged to challenge the status quo and have new ideas;
- People are encouraged to talk about what has not worked and not just what has gone well, without fear of blame.
- People are encouraged to be brave and take risks that are managed and proportional to the benefit that can be gained.
- Data is used to learn and to make decisions – not the opinion of those that shout loudest.

Understanding people and why they behave as they do

The job of the Leader is to bring people with them. The HMEP LEAN project lifecycle is designed to assist this by ensuring that the people that do and lead the work are engaged in creating the new system. The biggest single influencer to the sustainable success of any change is that it is owned by the people in the system.

Understanding the interaction and interdependence between each element

All of the elements need to be addressed to lead the development of the most effective system, and to then put this understanding into practice.

Giving vision, meaning, focus and direction to the organization

The final competency is that Leaders should provide a constancy of vision, direction and focus for the system – this has a powerful unifying effect allowing everybody to pull in the same direction.

It is recommended that Leaders use the PDCA cycle (see below) to create and implement specific action plans for how they are going to adopt the new competencies. This model can be used to keep moving forward through small-scale interventions and by reflecting and learning.

- Plan: Plan how to experiment with new behaviour.
- Do: Experiment with the new competencies.
- Check: Understand impact of the new behaviours, get feedback from others.
- Act: Embed using the new competencies? What further changes for the next cycle?

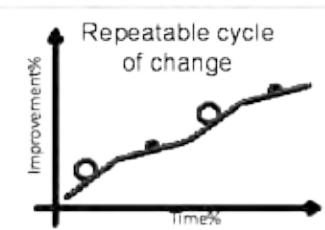
It is also recommended that Learning sets are established either internally or with other authorities to support Leaders' learning and to reflect on progress and plan new PDCA cycles together.

APPENDIX 5 – PROCHASKA & DICLEMENTE – STAGES OF CHANGE MODEL

Prochaska and DiClemente - Stages of Change Model

Some of the most common reasons for projects to fail in the long term are resistance to change and lack of support from key stakeholders. This model will help you to understand how ready stakeholders and the team are for change and to help them to move forward if they are impacting on the success of the LEAN project. People will be at different stages in the cycle of change and the first page of the model shows you how to identify what stage they are at. The second page gives tactics and activities that can be used to move them on through the cycle of change so that they are supporting rather than holding back the project. This is based on 'Changing for Good' by Prochaska, DiClemente and Norcross.

| Stage | Pre-Contemplation | Contemplation | Preparation | Action | Maintenance |
|---|--|--|---|---|---|
| Identify: How to recognise what stage stakeholders are in | Not Ready: <ul style="list-style-type: none">- Unaware of the need to change.- Block out any data that would mean they needed to change.- Denial.- No recognition of the problem.- Justification of the status quo.- Underestimate the pros of change and overestimate the cons. | Getting Ready: <ul style="list-style-type: none">- Recognition that there is a problem but don't know what to do about it.- Bargaining- Still daunted by change.- Acceptance of a problem but not enough to change.- Pros and cons balanced.- Ambivalence. | Ready: <ul style="list-style-type: none">- Making active plans but not yet changing.- Believe that they do have to change.- Pros are greater than the cons.- Starting to paint positive pictures of what the future could look like.- Making the right noises.- Taking small steps.- Telling people that they want to change.- Worried that it will fail if they act.- Doing preparation work. | Making Change: <ul style="list-style-type: none">- Change happening.- Learning and refining.- Pulling support to avoid relapse.- Feeling the benefits.- Expanding & improving. | Maintaining change: <ul style="list-style-type: none">- Successfully continuing the change.- Continuous improvement.- Refining and learning.- Outcomes being achieved.- Established support networks in place.- Able to support others.- Self sufficient.- Further iterations and expansions are accelerated. |



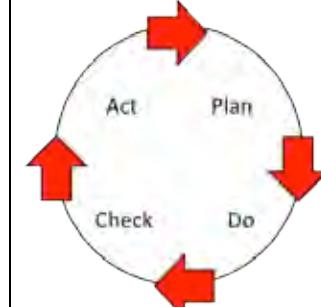
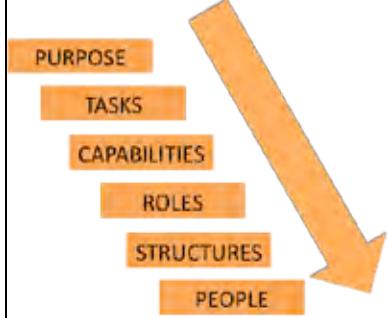
| | | | | | |
|-----------------|---|--|--|--|---|
| Move on: | <ul style="list-style-type: none"> · Listen. · Offer live experience in another system. · ‘Roll with resistance’ – challenge will create a defensive reaction. · Help them to be conscious of the affect of their decisions. · Unconditional positive regard. · Learn, get data and evidence about the situation. · Build connection. · Awareness raising. · Encourage to think about the pros of change. · Understand the customer perspective. · Encourage to feel the impact of negative behaviour. | <ul style="list-style-type: none"> · Understand them in their system – where they are and strengths – so tactics are tailored to the individual. · Find their burning platform. · Peer utilization. · Learn through research, case studies, theory etc. · Help them paint a picture of what the future could look like. · Build trusting relationships. · Create dissatisfaction with the current state. · Get data from a customer perspective. · Group challenge & live experience. · Work through the cons of change. | <ul style="list-style-type: none"> · Solidify vision. · Co-create plan. · Identify and act on small steps · Clarify outcomes, methods and resources · Remove barriers. · Help them identify and get a support mechanism in place. · Create mini-prototypes. · Solidify dissatisfaction. · Data gathering – especially identifying waste and the size of the prize. · Help them design how to communicate their commitment. | <ul style="list-style-type: none"> · Small prototypes Set Up to demonstrate early success. · Measure the benefits. · Help reflect where this can go. · Help to strengthen support network. · Get coaching and mentoring support. · Get challenge and feedback. · Use learning cycle.  <ul style="list-style-type: none"> · Plan how do we do more & grow the change. · Plan to ‘make it normal’ · Be conscious of risk of relapse and plan to avoid it. | <ul style="list-style-type: none"> · Make it normal e.g. purpose to people model.  <ul style="list-style-type: none"> · Maintain relationships. · Keep learning and improving. · Identify next areas for improvement (new geography, new service). |
|-----------------|---|--|--|--|---|

Figure 27 – Prochaska and DiClemente Stages of Change Model

APPENDIX 6 – CRITICAL FRIEND GUIDE

HMEP CRITICAL FRIEND GUIDE

Contents of the Guide

- 1. Introduction**
- 2. The Key Stages of a Project**
- 3. Critical Friend Briefing for Each Stage**
- 4. Conclusion**

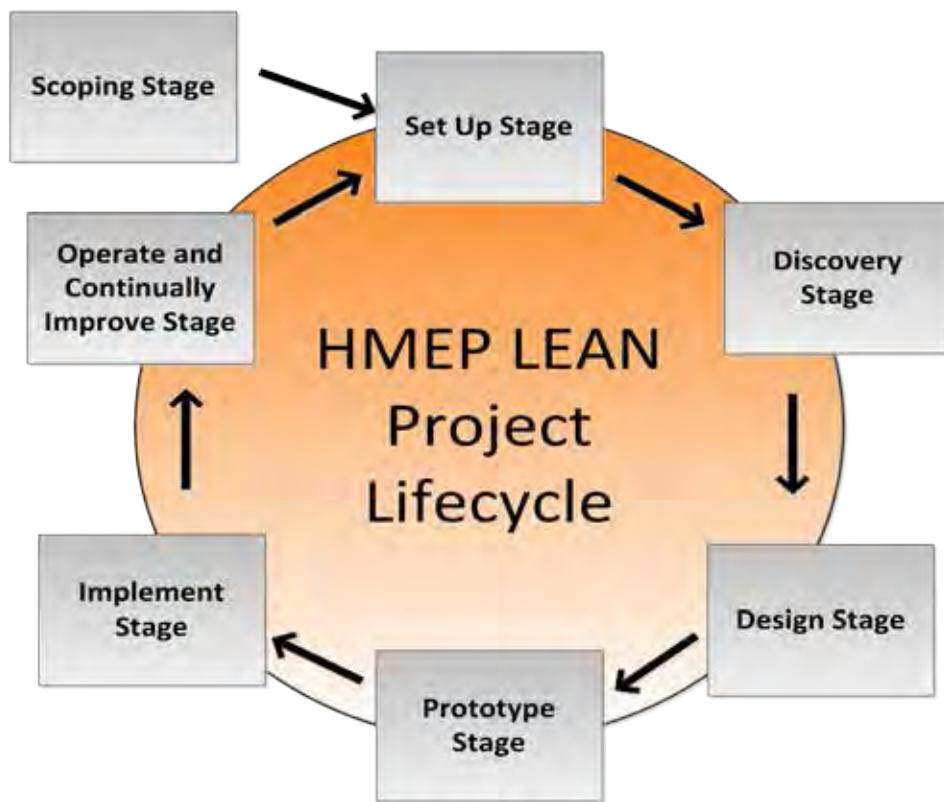
1. INTRODUCTION

In order to achieve the best results using the HMEP LEAN Toolkit a ‘critical friend’ should be involved. The critical friend is somebody outside of the system. It could be:

- Someone from another authority with experience of leading a project using the HMEP LEAN Toolkit, for example one of the case study contacts
- Someone with experience leading a LEAN project within your own authority
- A consultancy with LEAN expertise.

The critical friend should be identified, agreed and then ‘plugged into’ the planning and implementation of the project to allow a fresh pair of eyes to delve into and challenge the change process from beginning to end. It is important that this happens as they can give a fresh outlook on matters due to the fact they are not part of the system, but have had experience of LEAN. The purpose of the critical friend is fundamentally to challenge and support – to challenge thinking and to challenge the work done in each stage of the project. Their experience and independence will be invaluable in maintaining the right perspective throughout the LEAN project. The critical friend will build an understanding of how the project is progressing. There should be contact via email and telephone but really importantly they should build in site visits too. A critical friend should ask “show me, don’t tell me”. When the critical friend can see the work in situ, they can get a real feel for whether something is working or not and can offer challenge and support depending on the situation.

2. THE KEY STAGES OF A PROJECT



3. CRITICAL FRIEND BRIEFING FOR EACH STAGE

The critical friend should be asking the following questions for each stage. If the leaders and change team cannot answer or have not done the work for the question being asked they are not ready to move on to the next stage.

This can also be used as a general checklist even if a critical friend is not involved.

Scoping

| Question/Task | Further Detail |
|---|---|
| Are they clear on the purpose and outcomes of the stage? | |
| Who are the stakeholders? | What matters to them & what outcomes do they want from this project? How ready are they for change? See Appendix 5. |
| Can they draw a high level system picture? | Do they understand why it operates that way? |
| What is the size of the opportunity? | Can they quantify it? |
| Can they link what they learned back to their outcomes? | This should be a reference point throughout the change project. Always relate work back to the stated outcomes. The outcomes should be regularly checked with the stakeholders to ensure they have not changed. |
| Do the leaders have sufficient belief & ownership of the picture to move to the next stage? | Real leadership and ownership is needed for a LEAN transformation to be successful. |

Set Up Stage

| Question/Task | Further Detail |
|--|---|
| Are they clear on the purpose and outcomes of the stage? | Are they ready to start? |
| Are the strategic and operations leads identified? | Are they the right people? Are they clear about their roles? |
| Have stakeholders been identified? | Have they reviewed stakeholder analysis and engagement? Are any stakeholder issues apparent? |

| Question/Task | Further Detail |
|---|---|
| Has the right team been identified? | Have the core team been freed up from existing roles where needed? Has communication and preparation of the core team been completed? Do they have clear expectations of their roles? |
| Is there a detailed plan and timeline in place for: | Leaders Stakeholders Core team Critical Friend Consultants (where engaged) |
| Is there a schedule of events in place? | e.g. Meeting dates Set Up regularly throughout the project to challenge and support |
| Are logistics in place? | This should include workspace, IT & communications |
| Are wider communications in place across the organisation? | |
| Are outcomes clear and documented? | Is there a shared understanding of outcomes? |
| Has the critical friend Set Up how they will work with leaders to help them get the best possible outcomes? | Regular sessions to reflect and coach with documented actions Permission to give feedback and challenge Show me don't tell me |

Discovery Stage

| Question/Task | Further Detail |
|---|--|
| Are they clear on the purpose and outcomes of the stage? | A shared understanding of how the system is today from a customer perspective To build dissatisfaction and momentum for change |
| Is there a clear understanding of what the system looks like today from a customer perspective? | Is it a shared understanding based on data? Does everyone agree on what this is telling them? Do they understand who is the customer, what matters to customers and the customer purpose? Do they understand hotspots and waste? Have they built a systems picture including what, why, how many and how |

| Question/Task | Further Detail |
|--|--|
| | much? |
| Is the data set complete? | Do they have enough data on demand, flow and measures to proceed? Has the data been strongly challenged from an external perspective? |
| Do stakeholders want to change the system? | Is the size of the opportunity clear? Are stakeholders ready to change? If not, what is the strategy to help them get more ready to change? |
| Leaders | Are regular, effective, documented meetings happening with leaders? Are leaders fully prepared for the design stage? Have the leaders explored possible future designs? Are they ready to move forward without any surprises? Have the leaders prepared for Prototyping so that they will be ready to move quickly from Design to Prototyping e.g. freed up the core team? |

Design Stage

| Question/Task | Further Detail |
|--|--|
| Are they clear on the purpose and outcomes of the stage? | To build dissatisfaction with the current system To create a design for a new system To develop a prototype plan |
| Is the event designed? | |
| Has the story from Discovery been shared? | |
| Prototype Design | Has the design been co-created with those who will lead and test it? Has ‘everyone who can say no’ been part of the design process? Will the design deliver the outcomes for the client? |
| Is there a clear plan to start? | Will the plan deliver the design? |
| Are the implications of the prototype on performance and capacity in the existing system understood, agreed and mitigated where appropriate? | |

Prototype Stage

| Question/Task | Further Detail |
|---|--|
| Are they clear on the purpose and outcomes of the stage? | To experiment with the new system design |
| What are the robust, scientific measures? | Are they relevant to the outcomes? Are they end-to-end, customer measures? Are they being actively used? |
| Does the performance of the prototype evidence the outcomes? | |
| Do leaders understand the implications on: | Roles Structure Capacity IT |
| Is the prototype ready to grow to take more demand volume or to widen the area? | |
| Have they addressed or consciously accepted the system conditions? | |
| Are they communicating the benefits? | |
| Do the team & stakeholders believe that this will work? | |
| Have they co-created an implementation plan? | |

Implement Stage

| Question/Task | Further Detail |
|---|---|
| Are they clear on the purpose and outcomes of the stage? | To implement the new way of working across the whole system |
| Are measures being used to continue to improve performance? | |
| Are the new ways of working embedded and formalised? | Roles Structure IT |
| Are objectives met or on their way to being met? | |
| Are they executing the plan? | |

Operate & Continuously Improve

| Question/Task | Further Detail |
|--|--|
| Are they clear on the purpose and outcomes of the stage? | To embed the operation of the new system |
| Are they continually challenging and improving their work? | |
| Is the leader a LEAN leader? | See Appendix 4 |

4. CONCLUSION

This guide provides a breakdown of the questions a critical friend should be asking at each stage of the LEAN project. Through the whole process, if these cannot be answered, the leaders should not be moving to the next stage, as it could be detrimental to the project further down the line. It is important to remember that a critical friend's role is to provide challenge and support.

APPENDIX 7 – COMMUNICATING THE LEAN APPROACH

COMMUNICATING THE LEAN APPROACH

HMEP believes that LEAN is an entry point to the Programme and acts as a catalyst to wider transformational change, a key priority of the Programme. LEAN can be applied as part of a service wide review, to a particular service area or to individual highway processes.

Contents

- 1. Purpose**
- 2. Introduction**
- 3. Why LEAN?**
- 4. What is required to succeed?**
- 5. A brief outline of the method**

1. PURPOSE

This document is intended to communicate an overview of the LEAN approach to key stakeholders. It can be used as a quick alternative to reading the full Toolkit.

2. INTRODUCTION

Local authorities are facing increasingly difficult choices – there is continued pressure on budgets while the expectation of the public continues to grow. When coupled with the recent harsh winters, and in many cases an under investment in the Highways network for years, this often leads to bad news stories in the press – which puts pressure on Highways Managers and Members to respond. In fact many Members report that dissatisfaction with the roads is the issue most often raised with them by the public.

You have probably already made any obvious savings that are available to you – which is where LEAN and the HMEP LEAN Toolkit can help.

The HMEP LEAN Toolkit brings together a practical LEAN Method guide, allied to examples, case studies and models that will help run a LEAN project for your Highway Authority. It also helps you to decide if you have the capacity and capability to run a LEAN project on your own, with critical friend support, or whether you would benefit from expert/ consultant support to complement the Toolkit.

3. WHY LEAN?

LEAN is a change method that is used to examine and re-design all aspects of a service – from beginning to end and including customer interfaces, people, process, policy, equipment, measurement. It crosses team and organisational boundaries as the work is examined in detail to gain real knowledge of why the service works as it does today before it can be safely re-designed, with the root causes of problems understood and removed. It focuses on delivering only those activities that create value and systematically removes any that simply add cost. Applying LEAN really does mean that you can do more for less cost, as the examples below demonstrate.

Unlike most change methods where change is done to people, LEAN is designed to ensure that through active participation that the change is ‘owned’ by the people that lead and deliver the work in your authority. This very significant difference ensures that the change is sustained beyond the project and provides a sound basis for continuous improvement.

The benefits that you can expect from a LEAN project include:

- A reduction in cost as activities that do not create value are removed and work is done ‘right first time’.
- An improvement in service quality and capacity as teams focus on doing the work that creates value, right first time and in a timely manner.
- An improvement in team morale as they experience that they can improve the service that they deliver, and take an increased pride in their work.
- An improvement in customer satisfaction as they experience first hand the improvement in service.

LEAN can be applied at any level within your service, to a system such as Reactive Maintenance, to a process such as Safety Inspections or indeed to the whole Highways Service. Although if you are going to run the project yourself it is recommended that you start with a project of limited scope - thus learning to walk before you run. You can then take your learning, and the momentum created to move on to larger and more complex projects. If your need to save cost and improve service is so pressing that it means that you can't start small then the Toolkit identifies how you can seek peer support or third party consultants to complement the Toolkit.

Those Local Authority Highways services that have successfully run LEAN projects have achieved savings in the range £150k to £1m per year, and have achieved returns of 10:1 with the return often achieved within a year of the investment.

Some examples are:

- **Walsall Metropolitan Borough Council** invested £30k and within a year is saving £400k per annum from their revenue budgets, and their customer service increased. The LEAN project identified that Walsall were focusing on speed rather than first-time fixing, as a consequence some 80% of fixes were failing. Walsall had recently outsourced its operatives to Tarmac and morale was low. The LEAN project formed a team from across the organisations and together they identified new ways of working that they owned and had pride in. Following the change the failure rate reduced to almost zero.

- **Staffordshire County Council** is saving £1.3m per year supported by their LEAN project. Staffordshire have created a virtual joint venture with their outsource partner. They have designed a joined up system with a single management team. The result is a system with improved co-operation and a 12% saving in Council staff costs.
- **Sandwell Metropolitan Borough Council invested** £30k and within a year is saving £500k per year. The LEAN project identified that despite not having outsourced its direct labour force there was ‘silo’ working in the Council, with poor relationships and low morale. The project team comprised people from across the service, by working together they learned about each others problems, jointly found ways to solve them and improved relationships and morale. The team mapped visits to streets and found that being conservative they visited the same location 2 or 3 times to fix the same defect. In their new system Sandwell have removed almost 100% of repeat visits and have reduced material used by 44%.

4. WHAT IS REQUIRED OF A HIGHWAY AUTHORITY TO SUCCEED?

To be successful your LEAN project must be resourced properly and must be led – failing to do this will at best reduce what you achieve, and at worst result in your project failing.

The roles within a LEAN project are described in detail in the Toolkit and are summarised below, along with recommendations with regards to the role being mandatory or optional.

Strategic Leader– Mandatory

The Strategic Leader must have authority over the system being improved, and for your LEAN Highways project it is likely to be either an Assistant or Executive Director.

The key responsibility is to provide a constant and clear sense of direction and purpose for the project team, which should be sufficiently ambitious to enthuse the team. The Strategic Leader will then be called upon during the project to remove barriers to the success of the project, where those barriers are beyond the scope of the project team.

Operational Leader – Mandatory

The Operational Leader must have authority over the system being improved, and must be expected to retain that authority in the improved system – It should not for example be given to somebody just because they have some spare time, or are about to retire.

The key responsibility is to provide day-to-day leadership to the operational project team, constantly challenging them to use the LEAN Toolkit to create the most effective new design that they can, and making it ok for them to be brave enough to let go of things that they have always done if they don’t create value.

Operational Team – Mandatory

The Operations Team must be representative of the scope of the service that is being improved. It is their job to first understand the root cause of today’s problems and to then re-design the service by removing as many non-value creating activities as they can.

Critical Friend – Mandatory

The Critical Friend must be experienced at delivering successful LEAN Highways projects, they may be from within your authority, from another authority or be an external expert. The purpose of the role is to help the project succeed by bringing a wholly objective challenge to the Strategic and Operational Leaders, making sure that they remain truly focused on creating the most effective new design that they can.

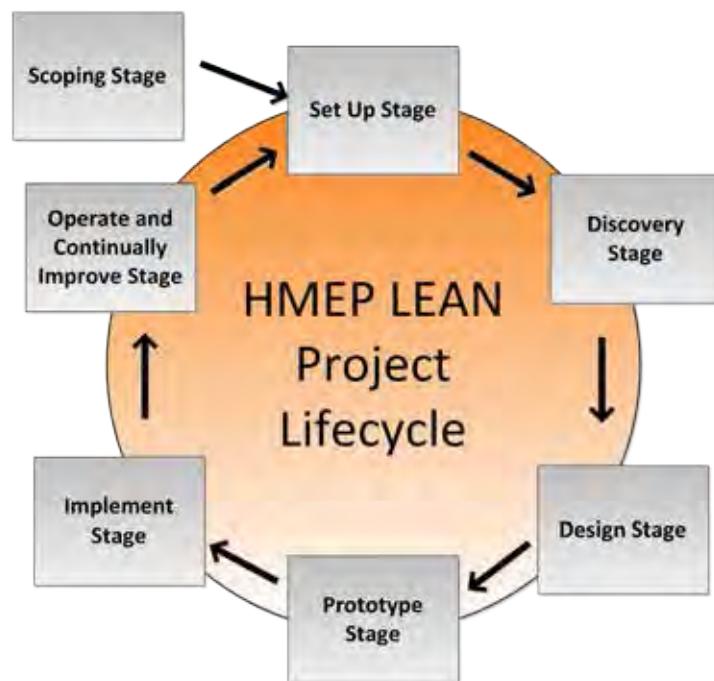
Expert – Optional

An external expert or consultant can be employed to complement the Toolkit, with their key role being to facilitate, challenge and support Leaders and Operational teams to create the most effective new design that they can. It may be appropriate to employ an external Consultant if you need to deliver the project very quickly, or the scope and complexity is such that employing an external expert reduces the risk of the project failing to achieve its full potential.

5. A BRIEF OUTLINE OF THE METHOD

The LEAN Toolkit is designed to maximise the chances of your improvement project succeeding – It does this by ensuring that all of the key Leaders and teams who are responsible for the work are engaged in creating the new design, people really do believe in and own that which they create. The method also takes the Leaders and teams on a change journey from understanding the root cause of issues today, and thus building sufficient dissatisfaction to want to change, and only then through a process of collaborative design of the new system to implementation, measurement and continual improvement.

While change is not linear any change project needs some structure, and the following diagram and brief narrative describe the structure of a project using the LEAN Toolkit.



Scoping - The purpose of the stage is to understand at a high level the scope of the system that will be addressed in the project, the most significant opportunities that exist in the system, and the key challenges that will need to be overcome to improve the system. This stage is not always necessary as it depends upon whether there is a need to better understand the scale of the opportunity before committing to the project.

Set Up - The purpose of the stage is to clearly define the purpose of the project, what success is and how it will be measured, how the project will be run and the roles and responsibilities of the key stakeholders.

Discovery - The purpose of the stage is for the leaders and teams to collectively build a shared understanding of their current system, both the ‘what’ and ‘why’ of the way that work is done and how capable it is to do what matters for its customers. During this stage leaders and teams are facilitated to have a normative experience of what it would be like to be a customer of the system and to thus build sufficient dissatisfaction with the system today to overcome the natural resistance to change that inhibits most people from moving from the status quo.

Design - The purpose of the stage is for the leaders and teams to collectively build a shared design for the new system and to agree how to start to experiment with that new design.

Prototype - The purpose of the stage is for the leaders and teams to collectively experiment with the new system design, to measure the success of the experiment and to reflect and learn from those experiments feeding improvements into the next iteration of the new system design.

Implement - The purpose of the stage is for the leaders and teams to implement the new system and to embed the measurement regime that will ensure that the performance of the system is continually challenged and improved. Included in this stage is the implementation of any changes to roles, structures and Information & Communication Technologies (ICT).

Operate and continually improve - The purpose of this stage is to embed the operation of the new system and for leaders to ensure that effective measurement, learning and improvement continue.

APPENDIX 8 – LEAN BRIEFING FOR OFFICERS

The purpose of this summary presentation is for the Operational Leader to communicate an overview of the LEAN approach to the Operational Team. These slides are available for download on the HMEP website.



Highways Maintenance Efficiency Programme

HMEP LEAN Toolkit for Highway Services

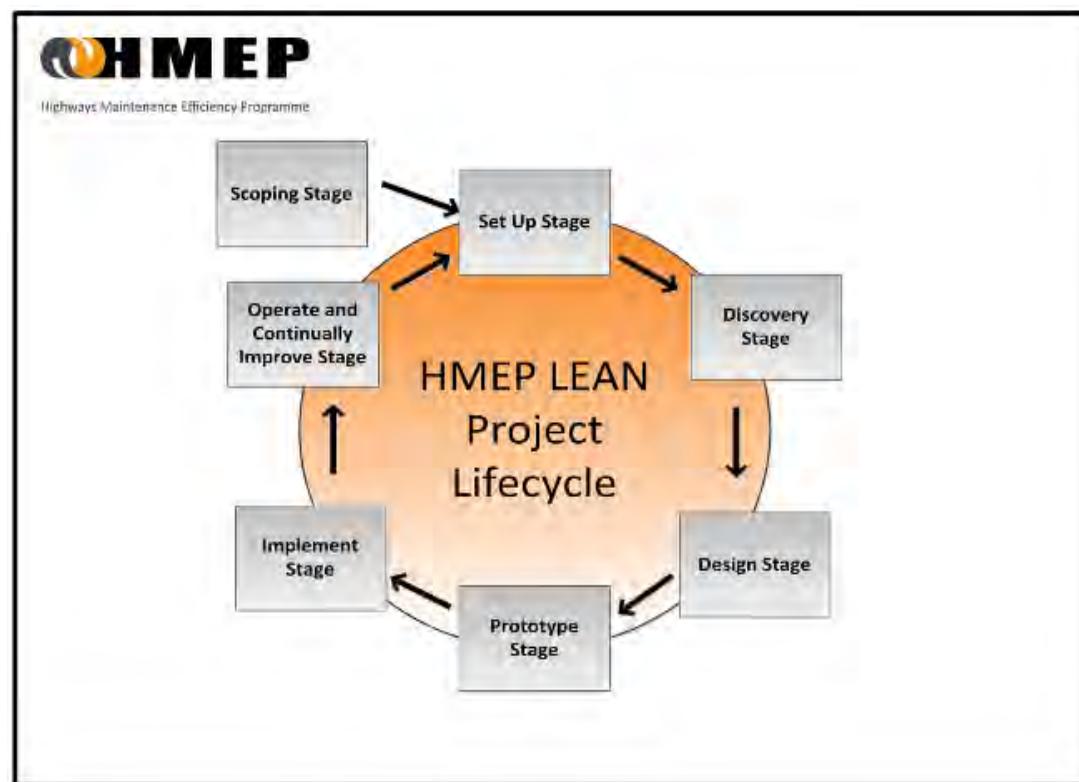
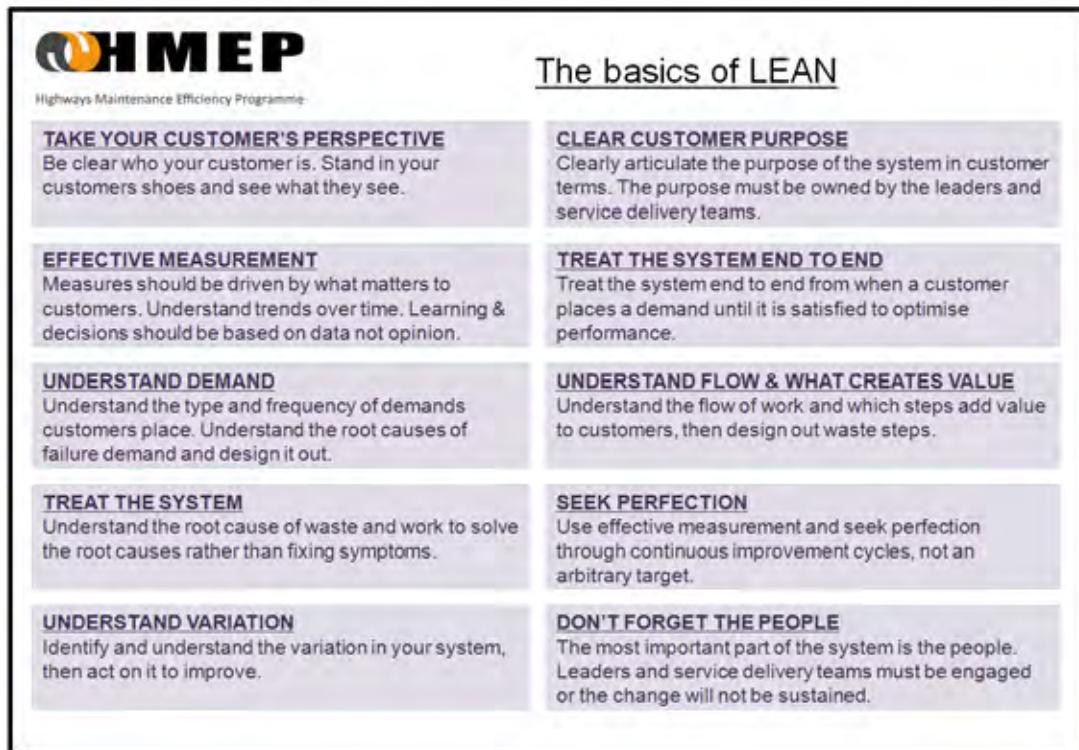
Summary Presentation



Highways Maintenance Efficiency Programme

Why do this?

- Run successful improvement projects
 - HMEP acts as catalyst for transformation and innovation across the sector
 - Proven method for service improvement and delivering efficiencies
- Save money
 - Highways LEAN projects have saved £150k to £1m per year and have achieved returns of 10:1, often within the first year of the investment.
- Improve performance





Highways Maintenance Efficiency Programme

SET UP**Purpose:** Be ready to start**What is it:**

- To clearly define the purpose of the project
- What success is and how it will be measured
- How the project will be run
- Roles and responsibilities of the key stakeholders

DISCOVERY**Purpose:** To build a shared understanding of the current system**What is it:**

- Both the 'what' and 'why' of the way that work is done
- What is it like to be a customer of the system

DESIGN**Purpose:** To collectively build a shared design for the new system and to agree how to start to experiment with that new design.**What is it:**

- Event to share understanding of the current system
- To design a new system
- Plan how to start experimenting

PROTOTYPE**Purpose:** To experiment with the new system design**What is it:**

- Reflect and learn to keep improving the design
- Measure success of the experiment
- Grow the experiment
- Decision to implement & plan to make the experiment 'normal'

IMPLEMENT**Purpose:** To implement the new way of working across the whole system**What is it:**

- To embed measurement
- To continually challenge and improve
- Implementation of any changes to roles, structures and ICT

OPERATE AND CONTINUALLY IMPROVE**Purpose:** To embed the operation of the new system**What is it:**

- Leaders ensure that effective measurement, learning and improvement continues



Highways Maintenance Efficiency Programme

SCOPING STAGE SUMMARY (Optional)**Purpose:** Get commitment to start**Key activities:**

- Agree purpose of Scoping
- Draw initial system picture with system owner
- Spend time in the work to understand customers, demand and purpose, flow and capability and resources consumed by the system
- Complete System Picture
- Share learning from the Scoping exercise and confirm purpose of Scoping has been met

Key to success:

- Understand the issues and waste
- Understand the size of the opportunity if a decision is taken to go ahead
- Create desire to change

Outcomes & Products:

- A purpose statement for the Scoping
- A first iteration of the System Picture
- Data on demand, flow, capability & resources
- An agreed System Picture
- A decision to go ahead



Roadworks c/o North East Lincolnshire in partnership with Balfour Beatty



Highways Maintenance Efficiency Programme

SET UP STAGE SUMMARY**Purpose:** Be ready to start**Key activities:**

- Scope the project with the sponsor
- Connect and 'contract' with key stakeholders
- Document Terms of Reference and Plan
- Socialise and agree Terms of Reference and Plan
- Sign-off Terms of Reference and Plan

Key to success:

- Clarity of understanding of purpose
- All stakeholders are clear on what they need to do to make this a success

Outcomes & Products:

- To clearly define the purpose of the project
- To clearly define what success is and how it will be measured
- To agree how the project will be run
- To agree roles and responsibilities of the key stakeholders
- To sign off Terms of Reference and Plan



Roadworks c/o North East Lincolnshire in partnership with Balfour Beatty



Highways Maintenance Efficiency Programme

DISCOVERY STAGE SUMMARY**Purpose:** To build a shared understanding of the current system from a customer perspective**Key activities:**

- Mobilise and brief core team
- Design communication and engagement for wider stakeholder groups
- Agree Purpose and Customers of system
- Understand Demand placed on system
- Understand Flow of work in system
- Understand Capability of system to meet purpose
- Understand resource consumed by the system
- Introducing LEAN Leadership competencies
- Create System Picture
- Communication and engagement with wider stakeholder groups

Key to success:

- Leaders and teams working together
- Build sufficient dissatisfaction to overcome resistance to change

Outcomes & Products:

- Clear statement of Purpose
- System Picture including both the 'what' and 'why' of the way that work is done
- Understand what is it like to be a customer of the system
- Stakeholder plan and communication plan
- Economic Model



Discovery Data c/o Shropshire County Council



Highways Maintenance Efficiency Programme

DESIGN STAGE SUMMARY

Purpose: To build dissatisfaction with the current system, to create a design for a new system, and to develop a prototype plan with measures

Key activities:

- Organising the Decision Accelerator
- Design and Delivery of the Decision Accelerator
- "Back to the Garage"
- Adding Further Detail to the Design
- Create Prototype Plan

Key to success:

- High challenge
- All key stakeholders engaged
- Take decisions there and then

Outcomes & Products:

- A well-organised Decision Accelerator event that delivers outcomes
- Good quality, fast decisions
- Agreement to prototype a new way of working
- A detailed design ready to prototype
- Agreed measures of success
- Clear plan to start the prototype as soon as possible



Design Day c/o Leicestershire County Council



Highways Maintenance Efficiency Programme

PROTOTYPE STAGE SUMMARY

Purpose: To experiment with the new system design

Key activities:

- Leaders and team ready
- Logistics of the prototype team
- Daily/Weekly review sessions
- Agree measures to evidence improvement
- Take one demand and deal with it – end to end.
- Increase demand through the prototype system
- Collate measures and key learning.
- Constant communication between the change team, leaders and partners

Key to success:

- A robust, stress-tested design
- Confidence across leaders and teams that the new design works

Outcomes & Products:

- New design tested on the ground
- Design proved robust
- Reflect and learn to keep improving the design
- Success of the experiment measured
- Ready to go ahead and implement the design



Patching c/o Leicestershire County Council



Highways Maintenance Efficiency Programme

IMPLEMENT STAGE SUMMARY

Purpose: To implement the new way of working across the whole system

Key activities:

- Plan the roll in
- Roll in communication
- Roll in – grow the prototype
- Embed measures
- Develop new culture
- Define new capabilities & roles & structures
- Pull ICT to support the new way of working

Key to success:

- To make the new ways of working permanent

Outcomes & Products:

- To plan and deliver the roll in
- To get the whole service working the new way
- To embed measurement
- Implementation of any changes to roles, structures and ICT



Working the new way c/o London Borough of Islington



Highways Maintenance Efficiency Programme

OPERATE & CONTINUALLY IMPROVE STAGE SUMMARY

Purpose: To embed the operation of the new system

Key activities:

- Review the Learning Cycle
- Stay ahead of the changing environment
- Ongoing leadership development
- Ongoing sponsorship
- Ongoing staff engagement
- Learn from people outside your system
- Share your success
- Repeatable cycle of change: Determine what next?

Key to success:

- Ongoing support and challenge
- Keep it live

Outcomes & Products:

- Embed the changes that you have created
- Keep the improvements live
- Keep developing, learning and improving
- Share your successes
- Agree what to work on next



Operating the System c/o Leicestershire County Council

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HMEP Project Board

| | |
|------------------------------|---|
| Matthew Lugg OBE | HMEP Advocate. Former President of Association of Directors of Environment, Economy, Planning and Transportation. |
| Anthony Radford-Foley | Technical Advisers Group |
| Martin Duffy | The Chartered Institution of Highways & Transportation |
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| Gary Thompson | HMEP Project Manager |

LEAN Support Consultants

Habanero Business Consulting

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