Highways England Company Limited

Area 9

Asset Delivery (AD)

Scope

Annex 18

Continual Improvement & Innovation

CONTENTS AMENDMENT SHEET

Amend. No.	Revision No.	Amendments	Initials	Date
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1 CONTINUAL IMPROVEMENT AND INNOVATION

1.1 Purpose and Scope

1.1.1 This annex sets out the *Client's* minimum requirements for the *Contractor* in terms of continual improvement using Lean principles and Structured Innovation for the delivery of the *service.*

1.1.2 Continual improvement and innovation comprises five parts

1) Outcome requirements
2) Strategic objectives
3) The method(s)
    a. Lean Continual Improvement
    b. Structured Innovation
4) Performance measurement
5) *Client's* training.

1.2 Outcome requirements

1.2.1 The primary outcome from using continual improvement, based upon Lean principles, is the generation and realisation of reductions in the cost of Providing the Service for the benefit of both the *Client* and the *Contractor,* while still achieving the requirements of the customer. These cost reductions will contribute to the overall efficiency savings that are specified in the Highways England Strategic Business Plan 2015-2020 and Highways England Delivery Plan 2015-2020 (see link in **Annex 3**) and beyond. Lean efficiency savings will be registered in Highways England's Efficiency Register.

1.2.2 An additional outcome will be the improvement of quality in Providing the Service, at a reduced or no additional cost to the *Client*.

1.2.3 A further outcome will be that collaborative working techniques, such as Lean, Collaborative Planning will become fully integrated into all business activities. This will ensure a one team approach is seen as the culture for the contract and drive engagement right the way down from the *Client* through the entire supply chain. Lean Collaborative Planning will be used to manage the delivery of both programmes and projects.

1.2.4 Lean Continual Improvement will ensure a focus is maintained at all times on the requirements of the customer, both internal and external.

1.2.5 A full appreciation and considerations of the importance to whole life costing must be adhered to at all times. The *Client* and its supply chain contractors demonstrates with supportive evidence that full consideration to whole life

costs during the optioneering value engineering phases of a design is conducted.

1.2.6 Structured Innovation techniques will be deployed routinely in conjunction with Lean to generate new ideas and step changes for more efficient ways of working, thus contributing to cost savings, while still meeting the requirements of the customer. The use of Structured Innovation is a technique that perfectly fits into the *Client*'s deployment of Lean both within its supply chain and internally. Structured Innovation will provide the tools to assist with the generation of ideas for the solution of problems during the Improvement phase of any Lean intervention.

1.3 Strategic objectives

1.3.1 The *Client's* key themes which the *Contractor* is required to deliver are

- planning for the future
- growing our capability
- building stronger relationships
- efficient and effective delivery
- improved customer services

1.3.2 The *Contractor's* executive leadership team need to fully understand their role as Continual Improvement Lean Innovation Leaders, they should

- commit themselves to self-development in terms of Lean Continual Improvement and Structured Innovation, not only by attending training workshops, but through background reading,
- coach others in terms of Lean Continual Improvement and Structured Innovation,
- drive and support a culture of daily Lean Continual Improvement, Kaizen and innovation and
- create the continual Improvement and innovation vision which aligns goals both vertically and horizontally, to meet the needs of the *Client*.

1.3.3 The *Contractor's* executive leadership team ensures that the continual improvement requirements, based upon Lean principles, are fulfilled at all times and actively drive Lean deployment in every aspect of their organisation.

1.3.4 The *Contractor* pro-actively manages their supply chain to ensure collaborative working takes place at all times to drive efficiency and achieve reductions in cost.

1.3.5 The *Contractor* identifies their key value streams to deliver the *service* and have a systematic and prioritised approach for the continuous/ongoing review and improvement of these value streams. The review of the value streams also includes the analysis and improvement of the Processes and

Procedures contained within annex 16 quality management. The review of the value streams identifies waste and removes it.

1.3.6 The *Contractor* actively seeks out improvement opportunities that primarily generate reductions in the cost of Providing the Service whilst also still meeting the needs of the customer. The *Contractor* not only generates new and original improvement opportunities but makes full use of the *Client's* Lean Knowledge Transfer Packs (KTP), which detail improvement ideas from the highways sector, that they can deploy on their phase of the construction process (see link in **Annex 3**).

1.3.7 The *Contractor* ensures that their employees and their supply chain's employees have Lean Continual Improvement and Structured Innovation skills and understanding. The level of skill and understanding required varies depending on the role being executed, but the *Contractor* trains sufficient numbers of employees to meet the needs of the business and those of the *Client*.

1.3.8 The *Contractor* ensures that every employee from the most senior leader down, has Lean Continual Improvement goals incorporated into their annual personal development plans. These goals contribute to the efficiency targets that the *Client* is required to achieve, as defined in the Highways England's Strategic Business Plan of 2015 to 2020 and beyond.

1.3.9 The *Contractor* ensures the realisation of the cost savings for all payment types in the contract (Lump Sum, Schedule of Rates, Time Charge, Cost Reimbursable etc) by using Lean Continual Improvement and Structured Innovation techniques. These efficiencies are registered on Highways England's Efficiency Register, with supporting evidence lodged as a Benefit Realisation Capture Form (BRCF) and KTP on the Highways England Lean tracker (see link in **Annex 3**).

1.3.10 The *Contractor* delivers other benefits that result in an improvement to the quality of the *service* at a reduced or no additional cost to the *Client*, whilst also meeting the requirements of the customer.

1.4 The methods

Lean Continual Improvement

1.4.1 The *Contractor* is required to execute, as a minimum, the following continual improvement methodology, although it is accepted that it may adopt, at its own discretion, additional methods to deliver the above outcome requirements and strategic objectives, but at all times these additional methods ensure customer needs are met.

1.4.2 Lean is a method of delivering the above outcome requirements and strategic objectives, and is a way of delivering value in a system. It produces what a customer wants, when it is required, with a minimum of waste, and to

a high level quality. Lean works through a relentless elimination of waste and reduction of variation. The reduction of variation will bring stability to programme and project delivery through the use of Lean collaborative planning techniques.

1.4.3 The *Contractor* uses Lean tools to systematically make improvements, in a planned sequence, to its key value streams and the Processes and Procedures in its Quality Plan (as defined in Annex 16) in order to identify customer requirements, establish and optimise the execution of value adding activity, identify and minimise non-value adding activity and eliminate waste.

1.4.4 The execution of continual improvement forms part of the role and accountability of the *Client*, as defined in Annex 16, Quality Management. Continual improvement is the role and duty of every employee member of staff just as with Health and Safety.

1.4.5 The following points in paragraph 1.4.6 below are a synopsis of the Lean Continual Improvement methodology that are contained in the Highways England Lean Maturity Assessment (HELMA) (see link in **Annex 3**). The full HELMA document and scoring matrix is available for free download from the Highways England Lean Publications web-site (see link in **Annex 3**), these documents represents a skeleton for how a successful business would operate to continuous improvement principles. It must be emphasised that Lean is not a stand-alone continual improvement methodology, undertaken by a select few, but is a successful business operating methodology and culture to be undertaken by everyone working on the contract.

1.4.6 **Integration of Lean into business strategy**

- The *Contractor* integrates Lean principles within the organisation's business plan and key strategy documents,
- ensures that the business plan sets out how Lean plays a part in delivering improved business performance and
- ensures that there is a well-defined and documented approach quantifying the benefits Lean will deliver to the business and its customers within the business plan. It is expected that a figure is specified by the C*ontractor* for the Lean efficiencies that will be generated on an annual basis.

1.4.7 **Lean leadership and engagement**

The *Contractor* ensures

- the leadership team are fully engaged as Lean leaders and drive the Lean methodology as the chosen form of continual improvement throughout the organisation, its supply chain and collaborating with the C*lient,*
- their leadership team are trained as Lean leaders and have a Lean skill base so they can mentor others and

- that Lean is an agenda item at leadership team and below meetings.

1.4.8 **Deployment management/ Lean infrastructure**

The *Contractor* ensures

- the organisation has a Lean deployment strategy in place that manages all Lean activity,
- the Lean deployment strategy analyses business and *Client* needs, the training of employees, the analysis of value streams, whilst also prioritising Lean activity for the capture of efficiency benefits and the transfer of knowledge. The Lean strategy covers each of the 10 HELMA aspect areas,
- lean priorities are set by consensus in line with the *Client's* vision and have the full commitment of the leadership team and
- a Lean deployment programme for the year is in place that follows the format of the Lean Improvement Action Plan (see link in **Annex 3**).

1.4.9 **Understanding customer value**

The *Contractor* ensures

- that an integrated customer satisfaction process exists whereby all employees are aware of customer satisfaction levels,
- actively seeks customer and *Client* input to its operations,
- consults with customers and *Client* on issues before they occur
- employs its own independent customer satisfaction systems / surveys to drive continued improvement and
- deploys Kano analysis to fully meet and understand the needs of the *Client*.

1.4.10 **Understanding of processes and value streams**

The *Contractor* ensures

- for all critical value streams and most minor processes, effectiveness is frequently measured, displayed and counter measures introduced when required to drive continual improvement,
- for all value streams and processes, formal improvement plans are seamlessly woven into the day to day activities of the teams within the organisation and
- when value streams and processes are analysed, bottlenecks are identified, root causes for defects understood and waste removed via the application of the eight wastes.

1.4.11 **Use of methodology and tools**

The *Contractor* ensures

- the organisation has adopted a kitbag of Lean tools that meet the needs of its business and those of its client. The kitbag of tools deployed will ensure the specified Lean efficiency targets are delivered,
- that Lean tools are made readily available to all employees and the organisation's supply chain,
- success stories via Knowledge Transfer Packs (KTPs) from Lean deployment link back to the kitbag of tools and
- all employees and the organisation's supply chain have received formal training in the deployment of Lean tools. This contributes to improving the capability of their supply chain.

1.4.12 **Organisational coverage, activity and capability**

The *Contractor* ensures

- everyone within the organisation has had the opportunity to develop their personal Lean capability,
- a targeted approach is taken to driving Lean within the organisation's supply chain. The success of this training can be measured by undertaking a HELMA on the organisation's suppliers. A target score for HELMA of 1.5 and above is deemed as an acceptable minimum level for an organisation developing a continuous improvement culture and
- the training programme for the organisation has the optimum blend of Lean awareness, practitioners, green belts, black belts and master black belts to support the improvement programmes and there is a genuine growth in Lean capability.

1.4.13 **Performance improvement/ Benefit Realisation and delivery**

The *Contractor* ensures

- they directly contribute to the Highways England Area Efficiency Register by lodging efficiencies and registering them as Lean techniques,
- contributions to Highways England's Efficiency Register are evidenced through KTPs lodged on the Highways England Lean Tracker and supported by BRCF. Guidance on BRCFs and KTPs is available for free download from the Highways England portal (see link in **Annex 3)** and
- leadership team reviews and improvement activities are tracked and managed through to their ultimate realisation.

1.4.14 **Lean collaboration, climate and culture**

The *Contractor* ensures

- leaders create a climate in which people want to do their best, to motivate direct reports and all team members of the organisation,

- leaders ensure meetings are conducted around visual display boards, where team performance is actively displayed, discussed and countermeasures put in place to mitigate concerns and causes to drive root cause solutions to problems and
- integrated teams are established that deploy collaborative planning on the delivery phase of all construction projects and collaborative programme planning for the delivery of programmes of work.

1.4.15 **Supplier maturity**

The *Contractor* ensures

- supply chain partners are an active and integral part of the project teams,
- Lean improvement activity is founded on a collaborative working approach with true integrated project teams working with customers / *Client* / stakeholder and supply chain partners and
- all supply chain partners adopt Lean principles and processes to routinely improve their business area and improve the capability of the entire supply chain.

1.4.16 In carrying out the above methodology the *Contractor* enables and supports its supply chain in the adoption of Lean Continual Improvement and engages the supply chain in Lean improvement projects.

1.4.17 The *Contractor* refers to the *Client's* Managing Down Cost Toolkit to identify and consider continual improvement opportunities (see link in **Annex 3)**.

Structural Innovation

1.4.18 Structured Innovation is a unique, rigorous and powerful toolbox of techniques that can be applied to ensure that all potential areas of innovation are explored when seeking solutions to a problem. The tool-box of techniques has been developed from the Russian Theory of Inventive Problem Solving (TRIZ).

1.4.19 The use of the Structured Innovation tools are a direct compliment to Lean Continual Improvement and it exactly fits into the Improvement phase of any Lean Continual Improvement intervention. Structured Innovation is a complimentary initiative to Lean Continual Improvement and provides a tool-box of innovation techniques that sits within the Lean Continual Improvement philosophy and provides a mechanism for the generation of ideas at the Improvement phase of any lean intervention.

1.4.20 The *Contractor* executes the following minimum Structured Innovation methodology, although it is accepted that it may adopt, at its own discretion, additional methods to deliver Structured Innovation.

1.4.21 The *Contractor* uses Structured Innovation tools to drive a culture of innovation within their business. By adopting a structured approach it ensures innovation becomes a skill that can be applied by all employees and not just a select few.

1.4.22 The execution of Structured Innovation enables *Contractor's* staff to come up with large step change ideas to meet the challenges of the future as identified in Highways England Strategic Business Plan of 2020-2025, in terms of increased spend balanced against a finite resource and expected efficiency savings.

1.4.23 The *Contractor*

- Strategic Use of Structured Innovation - adopts structured innovation principles as part of formal strategic plans for the *Contractor's* business including the Area Strategic Business Plan.
- Effective Supporting Infrastructure - defines, develops and establishes a supplier network hub to raise awareness and use of structured innovation techniques.
- Innovation Leadership - ensures senior leaders and management within the *Contractor's* organization enthusiastically embrace the concept of structured innovation and drive its use.
- People Development - ensures an education and training programme has been designed and deployed for all levels to cover structured innovation.
- Structure and Behaviour - ensures policies and procedures promote, encourage and support the use of structured innovation, and that a mechanism is in place to capture innovations that link to the solution of problems.
- Collaborative Working - ensures that structured innovation is used to drive innovation at collaborative working meetings.

1.4.24 In carrying out the above approach the *Contractor* assists and enables its supply chain in the adoption of Structured Innovation techniques.

1.4.25 The following list of Structured Innovation tools represent the minimum that the *Contractor* uses in deploying structured innovation

- consider "ideality" at the start when solving any problem, what is your ideal solution without the constraints of cost and technology and from this you can assess what are the main functions of ideality that you must deliver, and those functions that can be dropped.
- thinking in both time and scale, using the 9 Box technique,
- the structured innovation prism, which leads you to consider world problems which mirror your problem which will lead to world solutions,
- the 39 technical contradictions matrix, which leads to 40 inventive principles,

- the use of functional analysis for the trimming of harmful actions from an operating system,
- the 8 trends of evolution,
- the analysis of the resources you have in your system which best match your customer's requirements,
- the effects data base of 2500 solutions,
- the 12 standard creativity triggers to promote big picture thinking,
- identify on KTP how structured innovation helped deliver a solution.

1.5 Performance Measurement

1.5.1 The *Contractor* records and measure the benefits realised from the execution of the Lean Improvement process in accordance with the *Client*'s Lean Benefits Realisation Guide (see link in **Annex 3**). This system uses a Benefits Realisation Capture Form (BRCF) which at start up reports the forecast of expected savings and upon completion records the actual savings achieved.

The *Contractor* submits a KTP for every improvement that is made so that this knowledge can be shared across the industry and further savings can be made when this new way of working is implemented. The *Contractor* proactively reviews and implements previous KTPs and adopts these new ways of working within its own organisation. Additionally, the KTPs form the documentary evidence that is required by the Office of Rail and Road regulation for the efficiencies the *Client* is claiming.

1.5.2 The *Contractor* submits an annual Lean Improvement Action Plan (IAP) to the *Client.* Copies of the IAP can be downloaded free.

1.5.3 The *Contractor* reports to the *Client* on a monthly basis the following matters using in a format agreed with the *Client*:

- Lean benefits achieved within month and forecast lean activities for the next month in line with the milestones in the annual Lean Improvement Action Plan, and
- ensures results are recorded showing general details about the improvement, planned/targeted benefits, and actual/realised benefits with supporting calculations.

1.5.4 For all Lean efficiency savings and all Lean projects, the *Contractor*

- Reports savings using the Client's Benefits Realisation Capture Form and Highways England's Efficiency Register,
- Completes KTP, in either a report or A3 style that follows Define, Measure, Analyse, Improve, Control and Transfer (DMAICT).
- Logs the KTP on the *Client's* Lean Tracker System as detailed in Annex 6 – Information Systems.

The *Contractor* adjusts its delivery of continual improvement process based on lessons learned from the ongoing measurement of its performance.

1.6 Training

1.6.1 The *Client* supports the *Contractor* with training sessions in the following areas:

- 1 day of Lean awareness for key staff,
- Collaborative Planning and programme planning workshop, for key staff,
- Effective use of Continual Improvement cells workshop for key staff,
- Structured Innovation awareness workshop for key staff and
- Lean problem solving workshop for key staff.