



Global Future Cities Programme

SIMMS ITS Masterplan

25th January 2022

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UK Prosperity Fund Global Future Cities Programme



Context within the transport masterplan

Context within the transport masterplan

Masterplan purpose

Why is it important to initially establish the **purpose** of the masterplan?

- View the masterplan's purpose as part of the '**bigger picture**' of efforts
- Avoiding wasted resources, duplicated work, or misaligned and unachievable targets

Why does the area need a masterplan?

- Develop an understanding of the desires possessed by the parties/governing organisations who commissioned the masterplan
- This could be centred about shortcomings/ issues highlighted in the area

Outline a **criteria for developments**

- May include loose goals for improvements within the area

Context within the transport masterplan

Context within the wider transport masterplan

Where does the masterplan sit regarding other masterplan documents?

There may be other, broader, transport masterplans that encompass the region of consideration

Other masterplans may bring pre-existing conditions to future developments

- When aligning strategies with pre-existing conditions, schemes selected may offer enhancement to existing planned/enacted interventions

The ITS masterplan must **interpret** the transport masterplan

- Note if goals have shifted or been fulfilled
- Avoid missing existing issues and duplication of work

Context within the transport masterplan

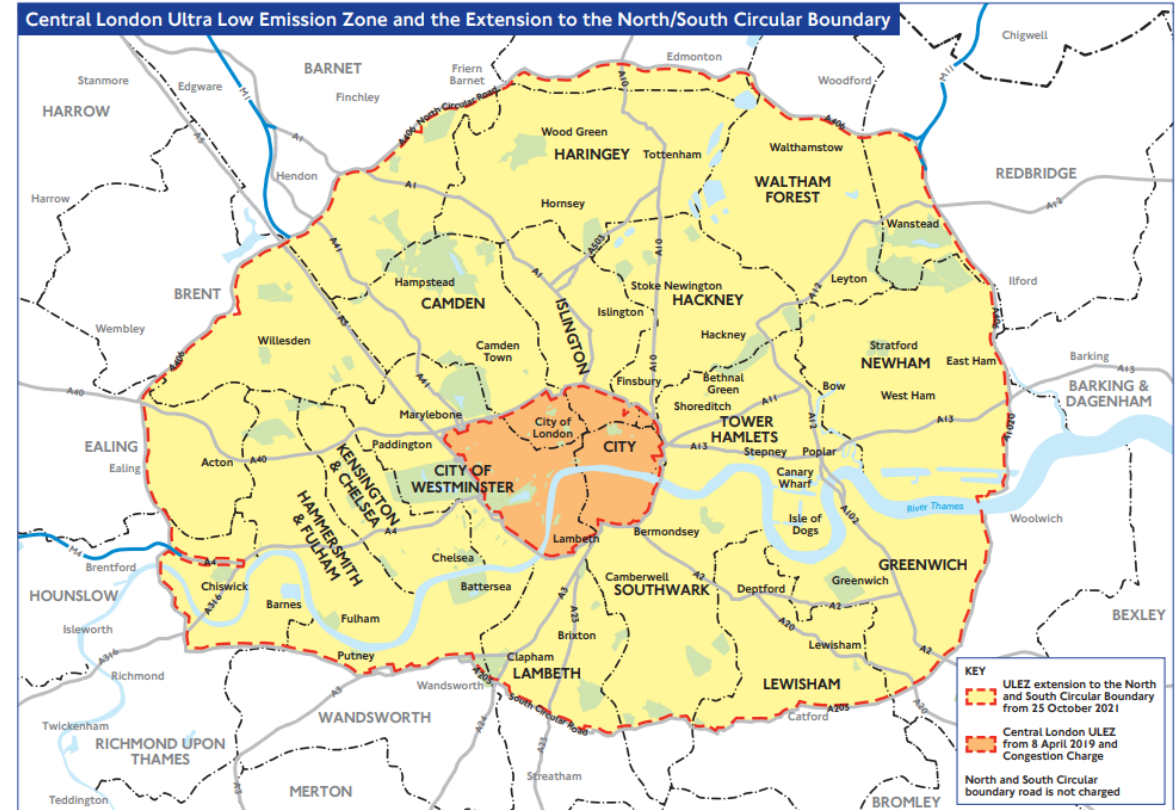
Define the area considered in the masterplan

Enables understanding of the **constraining factors** on the masterplan

Analysis of the area should reveal what other developments are planned/currently taking place within the masterplan area

Questions can be raised when considering these project's outputs, as to if they can be developed further/learnt from

Objectives can be further refined



Context within the transport masterplan

Specifying/parametrising elements of the transport system that concern the masterplan

Which systems will the masterplan focus on developing?

Exact transport systems need to be specified as **parameters**

- Allows proper consideration within the whole transport masterplan of what areas the ITS masterplan document should cover

ITS masterplans systems will commonly be implementation of strategies that employ ITS technologies to improve network utilisation

Important to return to understanding the 'big picture', enabling fulfilling of the larger area goals





Alignment with other strategies


Alignment with other strategies

Narrow down the issues the masterplan attempts to tackle to establish a common vision to coordinate future developments

When defining the area considered in the masterplan, questions can be posed such as:

- Do the highlighted issues/areas earmarked for improvement align with that of higher echelons?
- Broader masterplans may have **overarching goals** – does the masterplan need to align with other literature examples by proposing schemes to be made in conjunction with other improvements to the transport network?

Are there specific **standards** and broad strategies in place across the area?



Objective and requirement definition

Objective and requirement definition

Refining overall developmental needs into specific system requirements

Firstly, **objectives** for the area should be defined. The masterplan will suggest interventions to solve these issues

Objectives should be set broadly, based on areas highlighted in previous sections

High-level objectives - no specification of how they will be achieved

For example:

- Congestion at peak hours on specific routes in the defined area is highlighted as an issue that needs addressing
- Objective – reduce road traffic congestion at peak hours

Objective and requirement definition

Quantitative Outcomes

For each objective, **intended quantitative outcomes** can be established

To meet each objective, performance outcomes should be selected to indicate achievement of the goal

Meeting these **metrics** would reflect that the region has achieved the objectives derived from the purpose of the masterplan

Continuing with the example of tackling congestion at peak times, suitable performance metrics could include:

- Reduction in journey time by an achievable percentage
- Increased percentage uptake of public transport by the population



Objective and requirement definition

Key requirements

Advise **key requirements** to achieve these objectives

These are **qualitative points**, no specific metric for measurement or detail on implementation

Concluding the example, to meet the objectives/performance outcomes, the key requirements could be:

- Improved public transport links
- Improved information dissemination for public transport services
- Improve network throughput through more efficient utilisation





Baseline review

Baseline review (existing equipment review)

Provide the reader understanding of the existing transport system's hierarchy and any ITS components in place

This answers questions that could be posed such as:

- 'Does the region have roadside CCTV cameras?'
- 'Are adaptive signalling control systems in place and if so, where?'
- 'Does the area have any enforced low emission zones?'



Baseline review (existing equipment review)

ITS and supporting equipment

Allows existing equipment to be incorporated into the new strategies/schemes

Reviewing **output capability** of existing ITS systems

- Well performing systems could be incorporated into future schemes

Ideally up-to-date information should be held about all current operational equipment within the region such as:

- Condition and location
- How does equipment interface with a management control system?

Masterplan must also identify limitations of equipment

- Existing systems remaining operational may impose a **constraint** on the masterplan

Baseline review (existing equipment review)

Supporting data (e.g., traffic counts/models)

Gives an overview of the transport system

- Shows what is happening within the transport network

A **system** is a **sum of its parts** – important to know/predict possible impact of changes suggested in the masterplan

Initially assess what information/data is required and if it is already available

Underlying causes of issues can be addressed

Quantitative data enables further understanding of issues being tackled by the masterplan



Local and strategic interventions

Local and strategic interventions

Defining interventions to target achieving desired outcomes

Guidance to planners of possible schemes/strategies that could be employed

- Potential **output** they may bring
- Discussion of the benefits versus the associated cost (**BCR**)

Strategic interventions

- Consist of a large overarching objective
- Seeks to fulfil area goals that affect a large portion of the network
- Achieved using a more comprehensive scheme

Local interventions

- Directed towards a single point
- Lower in scope, or tackling issues not requiring widespread action

Local and strategic interventions

For each intervention information should be provided on:

- Relevant issues the strategy aims to alleviate explained each time
- Method in which different strategies can be implemented
- Examples of similar schemes
- Technologies needed to implement the scheme
- Relative impact of the strategy to help identify **Benefit Cost Ratio**

Specifics of actual implementation not mentioned, instead use common characteristics to discuss an overview of the strategy

Generalised approach of intended outputs

Local and strategic interventions

Relate potential benefits of implementing the scheme to overall developmental needs of the region from the earlier sections of the masterplan

Crucially not a set of promises – only offer guidance/advice about choosing schemes

Masterplan offers an overview intended for planners

- Intended to aid decision making for future investments

Cover the large spectrum of possible benefits and pricing for each option

Guidance should be regularly reviewed to keep common vision relevant



Indictive costings

Indictive Costings

Capital

Capital cost of a scheme is the initial start-up cost invested to begin the scheme

Large schemes may have significant capital investment

Other factors can come into play such as road closures and speed limit restrictions – with ongoing construction these factors may effect the local economy

Indictive Costings

Revenue

Revenue costs are the funds associated with the yearly recurring cost of a scheme, after initial investment and project completion

Initial baseline capital investment will vary

Revenue costs also vary, tending to increase overtime

Schemes with a larger capital investment may eventually cost less than a scheme with a lower upfront cost

- A scheme's revenue costs mean its cumulative total expenditure becomes greater

For each intervention, the masterplan should explain both forms of costings

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Cost
benefit
analysis

Cost benefit analysis

Summarise the **Benefit-to-Cost ratio (BCR)** of the proposed schemes

Benefits focused on solving/mitigating issues the intervention attempts to solve

The masterplan may also contain higher echelon objectives, achieved by outputs related to other issues

- E.g. improving prosperity in a region could be achieved by various improvements to the transport network which may involve ITS schemes/strategies
- Important to consider the impact an intervention may have across the whole network



Preferred list of interventions

Preferred list of interventions

Guidance as to the highest priority of the discussed strategic/local interventions

- Explain the reasons for selecting the schemes
- Largely based on Benefit-to-Cost ratio (**BCR**), which should be directly related the key requirements

Avoid recommending schemes based purely on the BCR

- It may be unwise to invest funds into a small scheme that affects a limited area or demographic group of road users

Consider the network **holistically**

- Other solutions could have a greater impact on the network
- Numerical reasoning cannot be solely responsible for scheme selection

Some schemes may tackle areas of a higher priority for development