Transport for London

Association of London Government

Monitoring Local Transport in London

Advice on Causal Chains

February 2004

Contents

Causal Chains – A new Approach to Monitoring Local Transport Schemes in London

Transport for London (TfL), the Association of London Government (ALG) and LOTAG are working closely together on a Joint Steering Group to develop, pilot and implement a new monitoring framework for transport schemes implemented by London boroughs and sub-regional partnerships under their BSPs, and ultimately their Local Implementation Plans.

An approach has been adopted by the Steering Group based on the concept of the **"Causal Chain."** This is a flexible solution which allows scheme promoters to select key performance indicators (PIs) based on the objectives towards which the scheme is expected to contribute, whether locally specific or taken from the Mayor's Transport Strategy.

A seminar was held by TfL in December 2001 with boroughs/partnerships in order to outline progress in developing the monitoring framework in the London context and seek feedback on the outline proposals. At this seminar, there was strong support for the causal chain approach and further work has now been carried out through a series of pilot studies with selected boroughs and partnerships, before rolling it out more widely.

Principles

Essentially, a causal chain is a conceptual diagram tracing the process by which a transport measure or policy achieves its objectives through a number of logical and sequential stages. It can be divided broadly into **five overall stages** as follows:

- **Inputs**: Policy framework, finance and staff resources contributing to delivery of the scheme or policy. Input measures may act as key enablers or barriers to scheme delivery; Financial Inputs are already reported through ICS/Bi-Monthly Reporting Process. The Causal Chains therefore focus on the links between outputs and outcomes and objectives

- **Outputs:** The scheme or policy delivered, and its key elements (e.g. local safety scheme, interchange access improvement);

- **Outcomes:** The stages by which a measure is able to achieve its wider objectives (e.g. reduced traffic speeds, or reduced accident risk). These can be divided into first order and second order outcomes depending on the scale and immediacy of impact;

- **Objectives:** Mayoral/TfL objejectives towards which the outputs contribute through the combination of first and second order ctives outcomes. These may also be mapped onto the operational strategies within the TfL Business Plan;

- **Performance Indicators (PI):** a quantifiable measure linked to specific stages of the chain covering selected outputs and outcomes. Monitoring of PIs is to be carried out by the Borough, TfL or others depending on scale, area of responsibility (e.g. TLRN) and cost.

In order to understand how and why particular outcomes and contribution to objectives are deliverted by particular combinations of inputs and outputs, **interpretation** of the data populating the causal chain also needs to consider:

- **Enablers and Barriers to Delivery**: factors which may impact on the ability of boroughs to provide the necessary inputs. or the ability to complete schemes to the intended quality within the planned timescale; Financial Inputs are already reported through ICS/Bi-Monthly Reporting Process. The Causal Chains therefore focus on the links between outputs, outcomes and objectives

- **Exogenous Factors**, changes in the overall local transport environment which may strengthen or weaken the link between outputs and outcomes so that the scheme acheives its objectives to a greater or lesser extent than planned.

Different links within the causal chain can be examined to establish whether those links in particular, and the overall process in general, is contributing towards delivery of the scheme objectives. If one or more links in the chain is not effective then it is unlikely that the measure is achieving (partly or fully) its intended objectives.

For example, it is unlikely that a scheme to increase mode share of public transport will be successful if it cannot be demonstrated that the scheme in question has made public transport more attractive, reliable or perceived more highly in some other way. This may be due to poor scheme design, delays in delivery or external influences which have increased local expectations of public transport services to an extent greater than the improvements offered. Similarly, a traffic calming scheme may not achieve its objectives of reduced accidents and reduced community severance if it cannot be demonstrated that traffic speeds and/or volumes have been reduced as a first order outcome.

It is recognised that individual borough schemes, or even whole BSPs or sub-regional programmes, are highly unlikely to deliver Mayoral objectives on their own. It is through the synergy between action by the boroughs, TfL businesses, Train Operating Companies and other stakeholders that the Mayor's objectives can be met in the long-term.

It is therefore not proposed that Boroughs should use the causal chain approach to actively monitor the wider mode shift, regeneration, social inclusion or air quality impacts of their schemes (although this may be the case for major schemes, this is likely to be the exception rather than the rule), but should generally confine themselves to the immediate (first and second order) transport outcomes which can be largely attributed to the schemes being monitored with some measure of confidence. In this sense, the best that can be ascertained for the wider Mayoral/TfL objectives is that the borough schemes under examination are generally **contributing**, either postiviely or negatively to these objectives; in other words it is realistic to determine the **direction** of the impact, but not quantify its **extent** in any detail. The latter is a challenge for TfL and other part of the GLA family in their monitoring of the overall Transport Strategy, other Mayoral strategies and delivery of the London Plan.

Process

A number of causal chain examples are set out in this Report, covering a range of Topic Areas for which Boroughs will be expected to apply the approach in their 2005-2006 BSP programmes, the bid submissions for which are due in June 2004. These are intended to suggest ways in which Boroughs might think about drawing up their submission in the context of the Mayor's transport objectives. It should be noted that there is no right or wrong answer or any "perfect" solution for a particular scheme – what is important is to demonstrate a reasonably comprehensive and logical sequence which clearly informs the performance indicators selected and data collection methodology. The attached examples are therefore indicative only.

As well as the causal diagrams themselves, it is suggested that Boroughs should include an ongoing commentary describing:

- a **scheme description** and key elements/sub-measures with a statement of the main Mayoral objectives which are delivered/contributed;
- **overall timescale/area** of scheme impacts including potential areas of transfer/displacement impacts;
- **key performance indicators selected, results and interpretation**;
- **supplementary impacts** (including displacement effects);
- **exogenous factors** impacting on results including activities by TfL businesses and background changes in key economic, social and environmental influences; and
- **further action required**/planned (to modify the scheme or develop it further).

TfL will develop Guidance on these other elements, and the key principles by which the causal chain approach will be applied, separately.

The following example causal chains are illustrative only and are intended to provide information for Borough officers in preparing their monitoring proposals in the context of transport schemes progressed through the 2005-2006 Borough Spending Plan process. Examples are provided for six TfL Topic Areas, for schemes of varying sizes and complexity, along with a template causal chain.

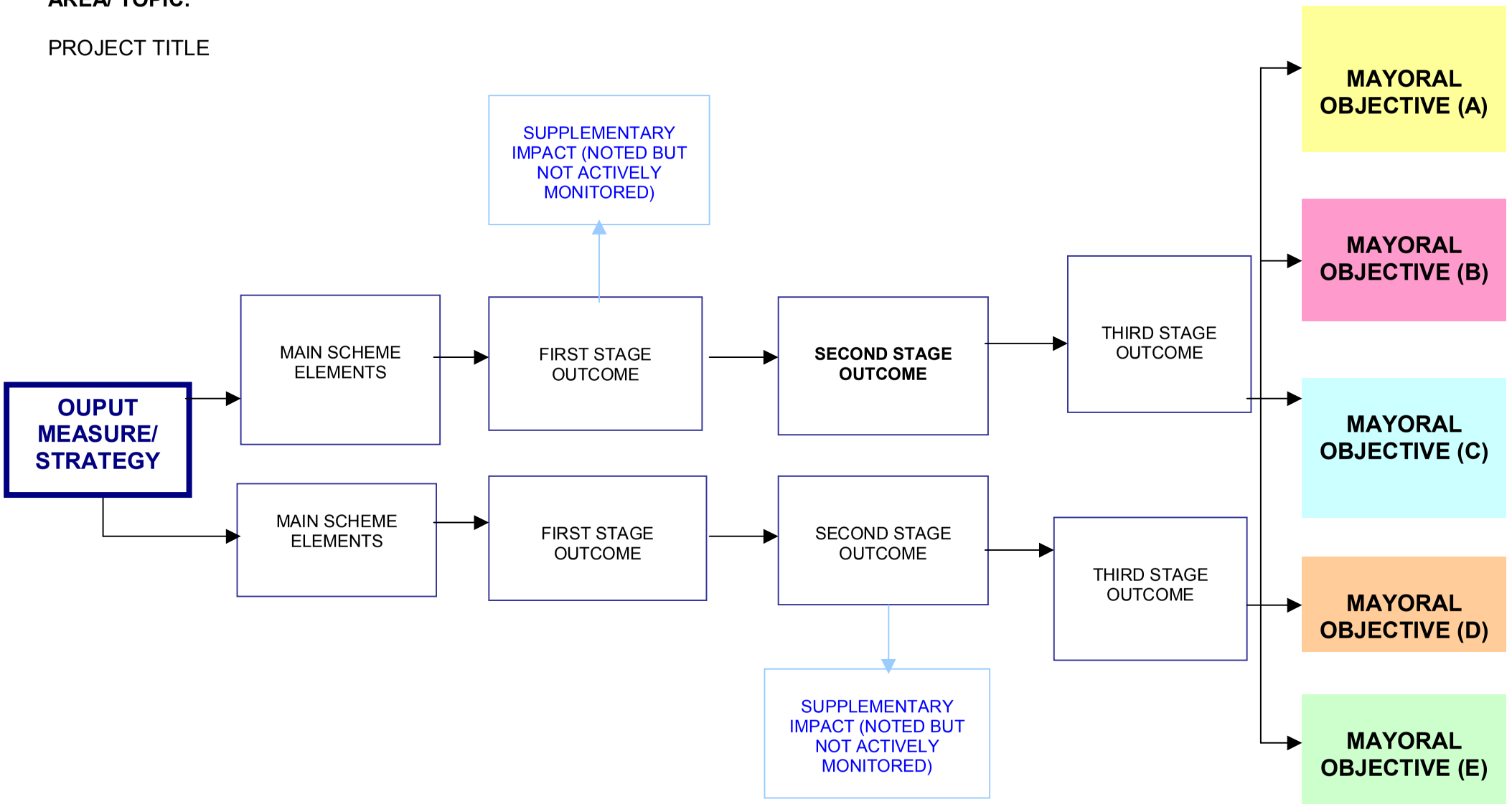
This document also contains a complete a list of suggested Performance Indicators for all Topic Areas, for use in Causal Chains. Further guidance on these PIs can be found in the Performance Indicator Grid for Outcome Monitoring of Schemes (2004- 05).

Example Causal Chains

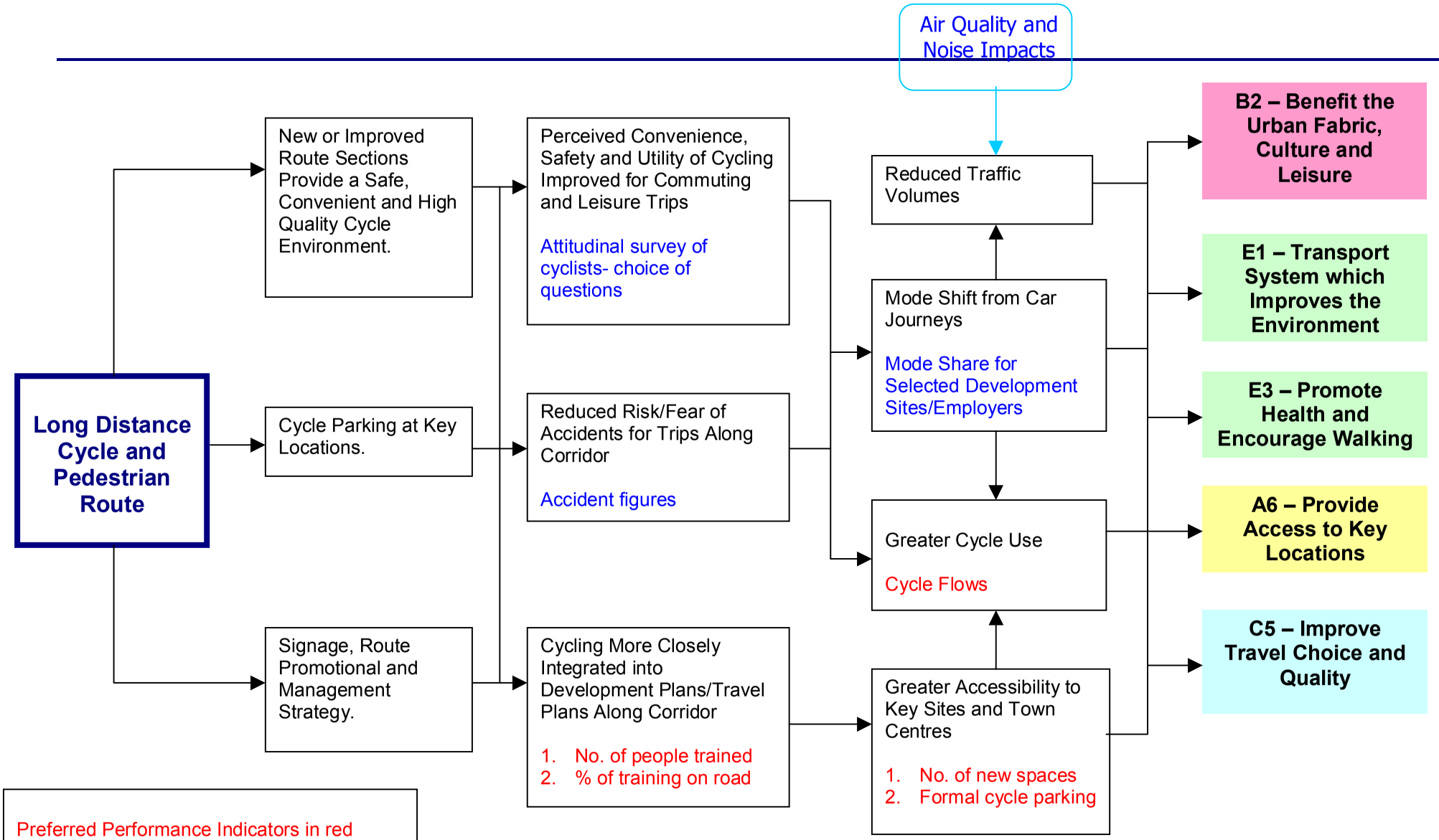
Template Causal Chain

AREA/ TOPIC:

PROJECT TITLE



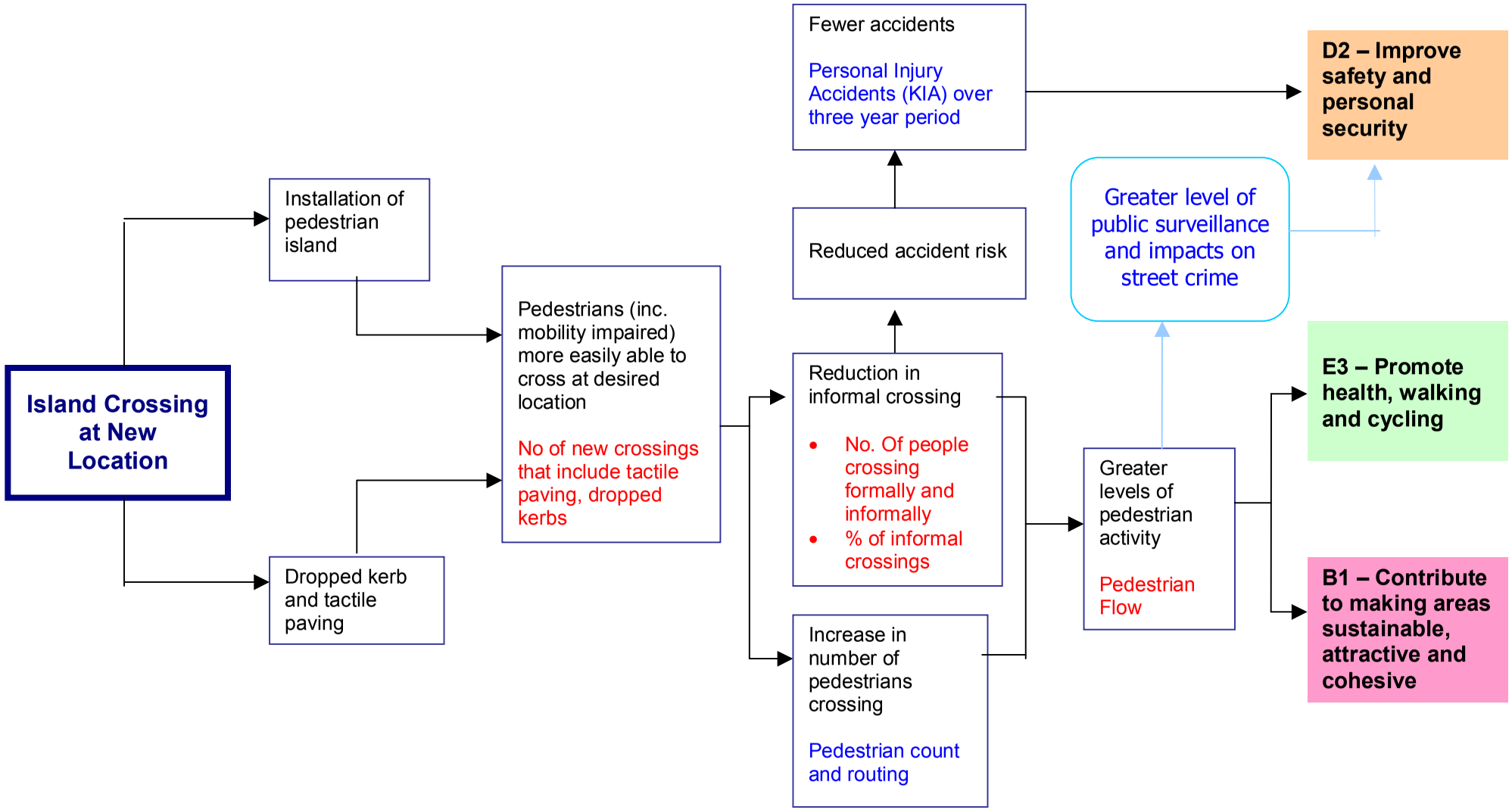
Cycling (CS)



Preferred Performance Indicators in red

Alternative Performance Indicators in blue

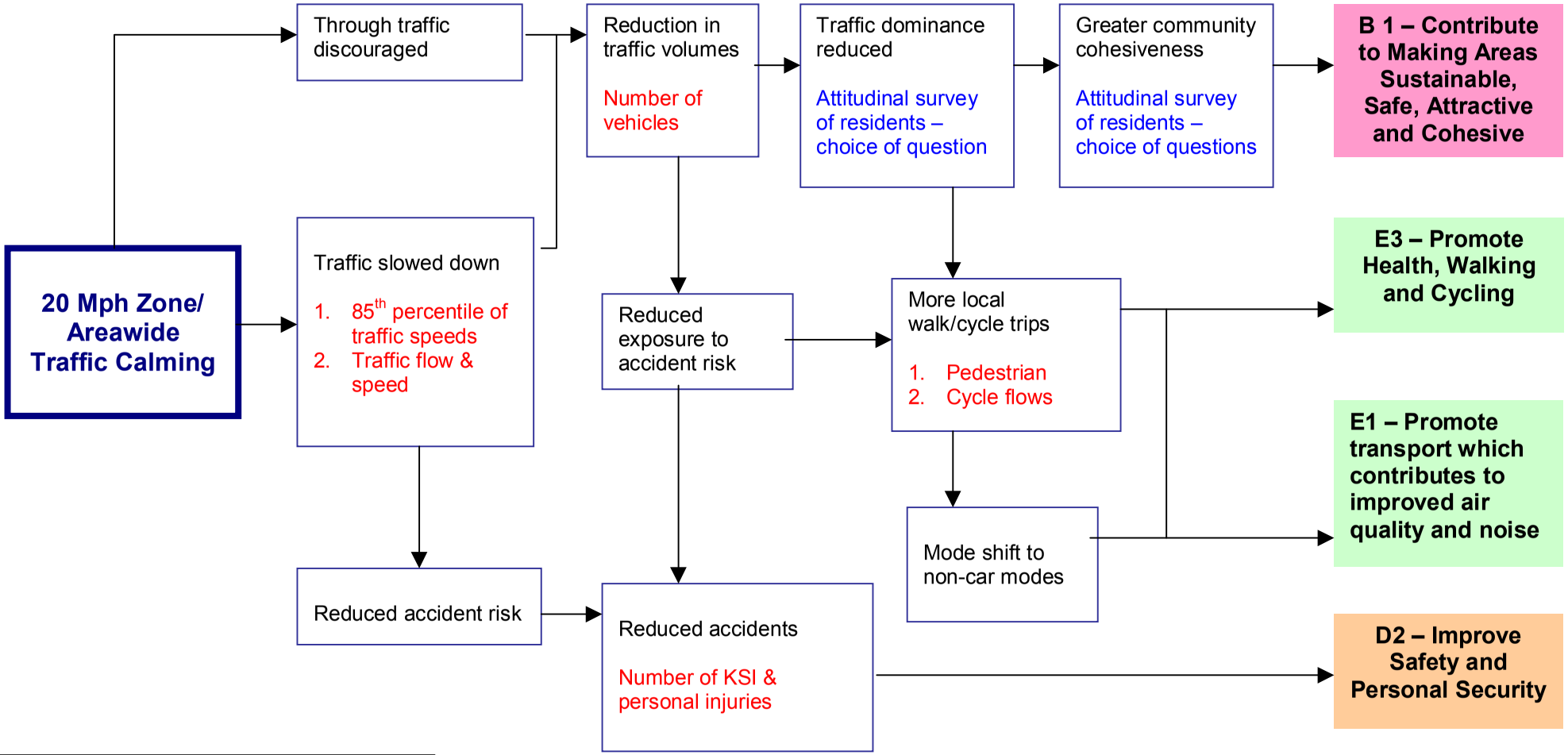
Walking (W)



Preferred Performance Indicators in red

Alternative Performance Indicators in blue

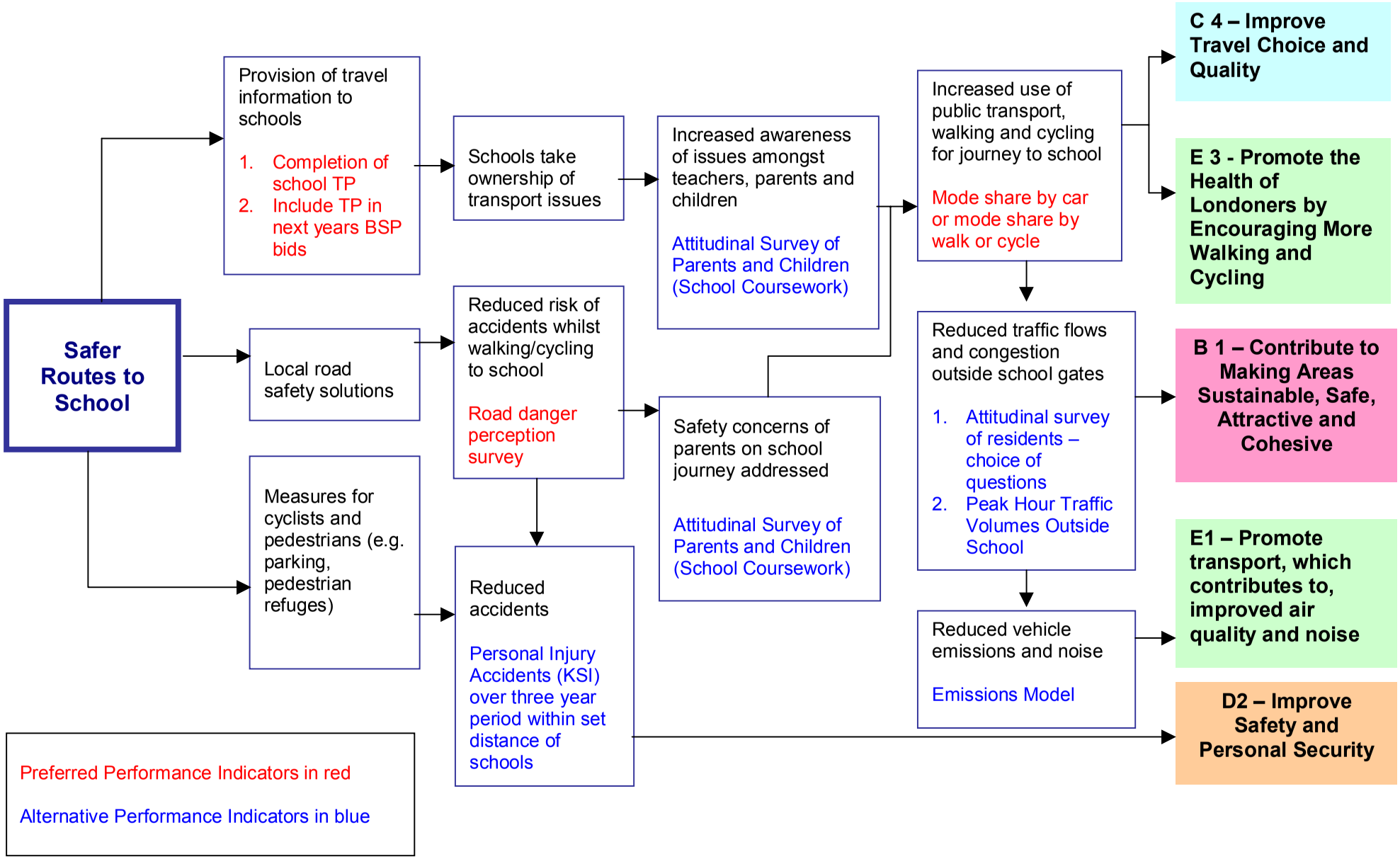
20 Mph Zones (ZO)



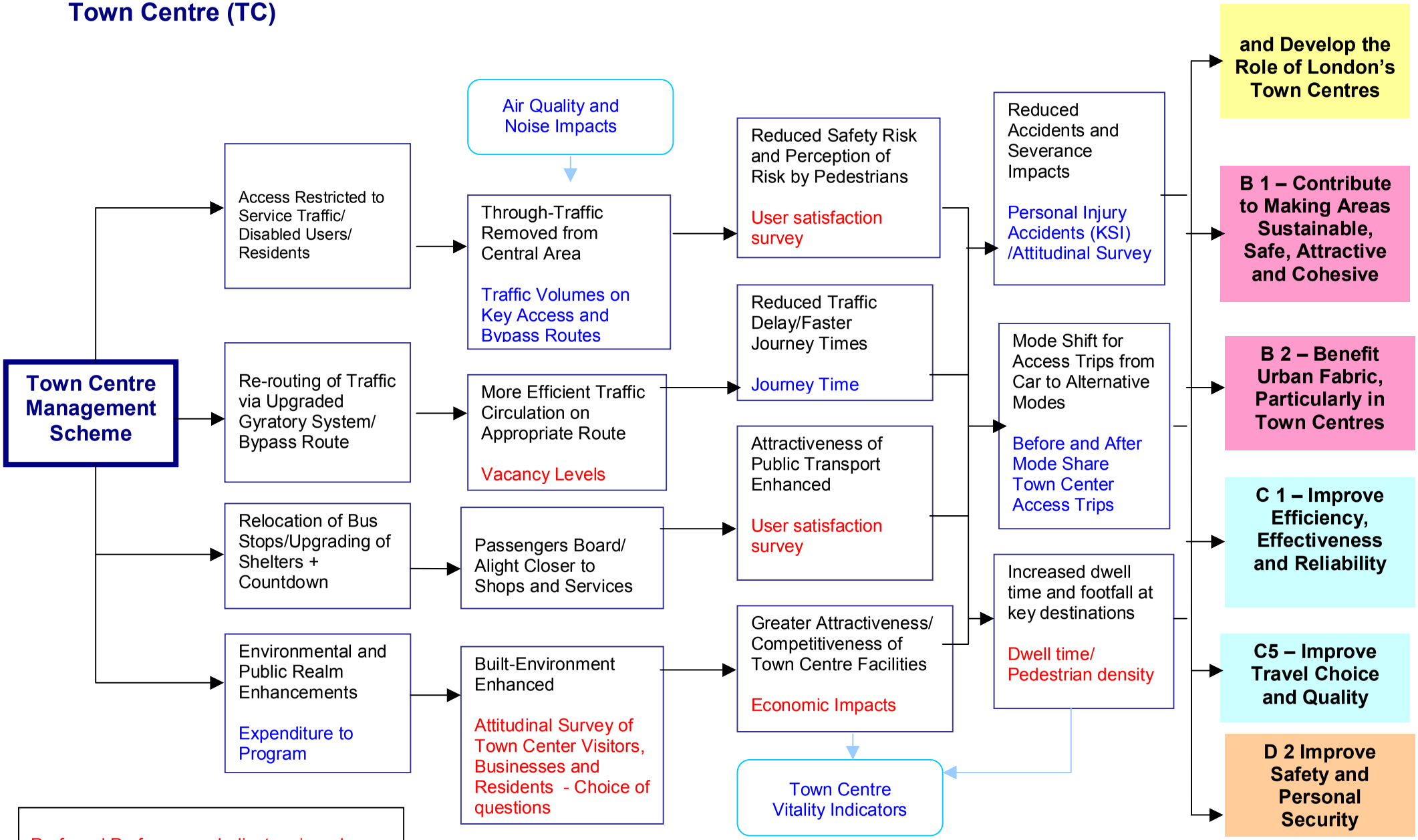
Preferred Performance Indicators in red

Alternative Performance Indicators in blue

Safer Routes to School (SRtS)



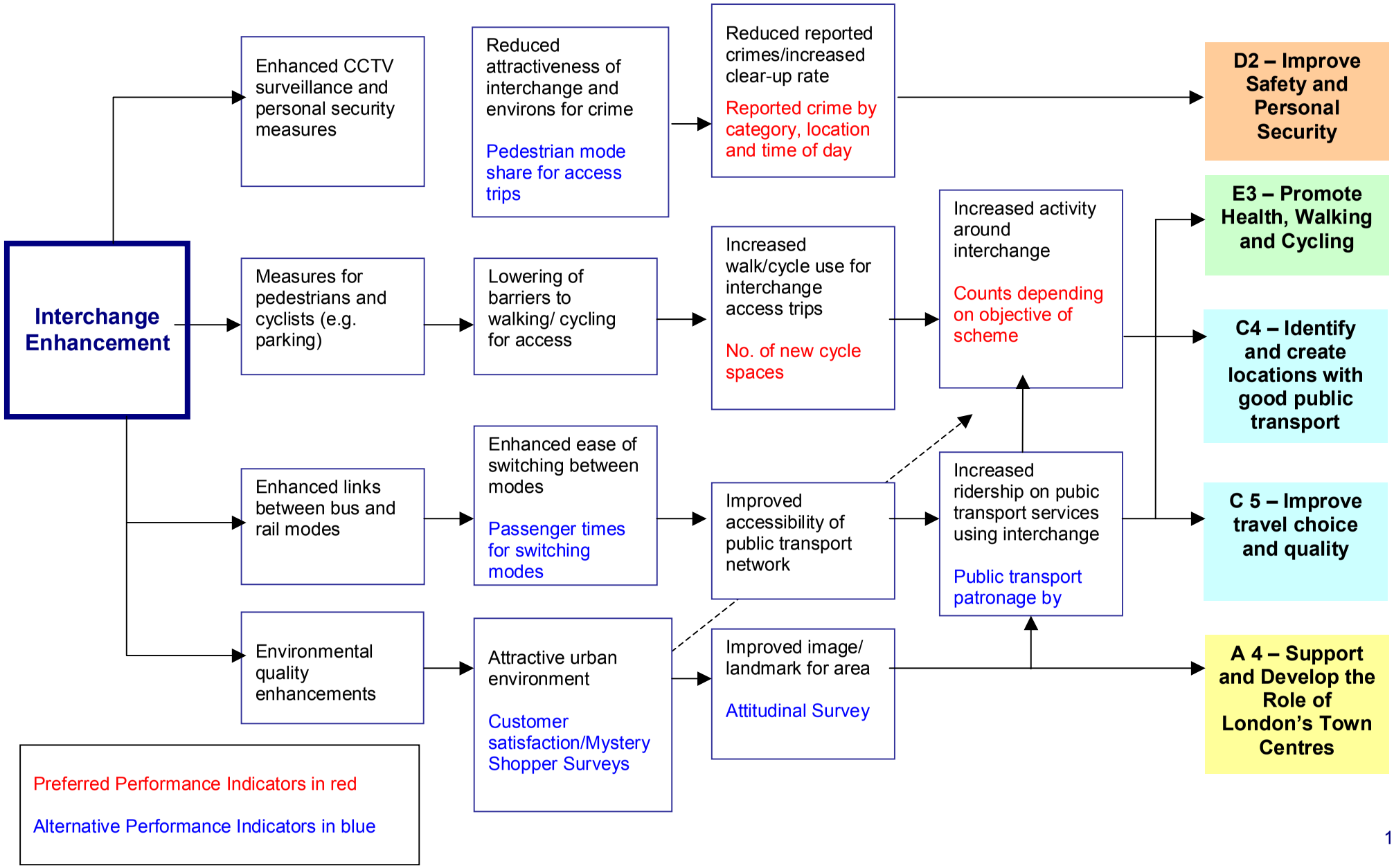
Town Centre (TC)



Preferred Performance Indicators in red

Alternative Performance Indicators in blue

Interchange (I)



Performance Indicators

20mph Zone (ZO)

- 85 percentile traffic speed
- Number of vehicles
- Pedestrian flow
- Cycling flow
- Number of KSI & personal injuries

Accessibility (AS)

Small Scheme
- Pedestrian Flows

Medium Scheme
- Flows of targeted group OR
- % satisfied with specific aspect of accessibility

Air Quality (AQ)

Small Scheme
- Mean levels of relevant pollutant from Ready reckoner

Medium Scheme
- Mean levels of relevant pollutant from Modeling exercise

Large Scheme
- Mean levels of relevant pollutant from monitoring station[s]

Controlled Parking Zones (CPZ)

- Percentage of non-compliance

Cycling

Link Improvements
- Cycle flows

Cycle Parking
- Number of cycles formally parked
- Number of new spaces

Cycle Training
- % of trainees cycling more after training than before
- % of trainees in accidents
- Number of people trained
- % of training on road

Freight (FS)

FQP Setup
- Number of partners
- Types of partners

Modal transfer
- HGV flows
- Number of rail freight depots & waterside freight wharves
- KSIs involving HGVs
- Tonnage transferred by water/rail

Interchanges/Station Access (IT)

Small Scheme
- Counts

Medium Scheme
- Counts

Large Scheme
- Counts
- % of people satisfied
- Number of new cycle spaces
- % of users walking / cycling / taking bus to interchange

Regeneration Programme (RP)

Specific to scheme
- Number of new jobs created
- Amount of new housing
- Pedestrian counts
- Cycling counts
- Pedestrian dwell time
- % satisfaction with specific aspect of area
- Economic Impacts
  - % vacancy levels
  - % of resident optimism / satisfaction
  - % optimism or confidence from business survey
  - Town Center Vitality Index
  - Retail turnover per year
  - Numbers of crimes

Safer Routes to School (SRtS)

Development
- Completion of school Travel Plan
- Include Travel Plan in next year's BSP bids

Delivery
- % mode share by car OR
- % mode share by walk or cycle
- % perceiving roads as dangerous

Resource Support
- Number of schools the Travel coordinator is working with
- Number of schools involved in the promotional program

Streets for People (SP)

Small/Medium Scheme
- % satisfaction with particular aspect of street
- Pedestrian dwell time

Large Scheme
- % satisfaction with particular aspect of street
- Pedestrian dwell time
- Pedestrian/Cycle flow
- Mean traffic speed

Town Centre (TC)

Small Scheme
- Pedestrian dwell time OR
- Pedestrian density

Medium Scheme
- Pedestrian dwell time
- % of town centre visitors satisfied with particular aspect of town centre
- % vacancy levels

Large Scheme
- Pedestrian dwell time
- % of town centre visitors satisfied with particular aspect of town centre
- Cycle parking capacity
- Economic Impacts
  - % vacancy levels
  - % of resident optimism / satisfaction
  - % optimism or confidence from business survey
  - Town Center Vitality Index
  - Retail turnover per year
  - Numbers of crimes

Walking (W)

Small Scheme
- Pedestrian flow
- Number of people crossing formally & informally OR
- % of pedestrian road-crossings made formally

Medium Scheme
- Pedestrian flow
- Number of people crossing formally & informally OR
- % of pedestrian road-crossings made formally
- Number of new crossings

Large Scheme

- Pedestrian flow
- Number of people crossing formally & informally OR
- % of pedestrian road-crossings made formally
- Number of new crossings
- Scoring against LPAC's 5Cs of walkability
- % satisfied with particular aspects of streetscape

Mayoral Objectives

A Making London a Prosperous City

A1- Remove barriers to competitiveness, efficiency and growth
A2- Provide capacity for future growth and reduce congestion
A3- Complement regeneration initiatives
A4- Support and develop the role of London's town centers
A5- Tackle unemployment and social exclusion
A6- Provide access to key employment and development locations
A7- Support and encourage balanced spatial growth across London

B Make London a City for People

B1- Make areas sustainable, safe, attractive and cohesive
B2- Benefit London's urban fabric, visual amenity and environment

C Make London an Accessible City

C1- Improve efficiency, effectiveness and reliability
C2- Support Sustainable patterns of travel
C3- Integrate transport and development policies
C4- Create locations with good public transport access
C5- Improve travel choice and quality

D Make London a Fair City

D1- Provide transport links for particular needs
D2- Improve safety and personal security
D3- Ensure London's diversity and greater equality

E Make London a Green City

E1- Contribute to improvements in air quality
E2- Protection and enhancement of the natural environment
E3- Promote the health, including more walking and cycling