A score of 1-4 was assigned to each risk from each category - Health & safety, service delivery, cost and reputation.

The risks were then further assigned red, amber or green status using a traffic light system, based upon the overall impact score and the likelihood score as shown in the 4 x 4 matrix below. The red colour in the matrix on the following page identifies the highest level of risk and box A4 which signifies a very high likelihood of the risk event occurring and a disastrous impact as a result. This is the highest level of risk for the Council.

Impact ↓						
	Disastrous (Total Impact Score 13-16)	A				
	Serious (Total impact score 9-12)	B				
	Moderate (Total impact score 5-8)	C				
	Minor (Total impact score <=4)	D				
			1	2	3	4
			Very Low	Quite Low	Quite High	Very High

Table 7.3 Risk Matrix

Risk treatment/control

Each category of risk is associated with an action that needs to be taken to either treat or control the risk:

Green - tolerate risk/maintain current action until time to review again

Amber - tolerate risk but keep under close review

Red - action plan required to manage/mitigate the risk

The purpose of action planning is to reduce risks so that, over time, all the risks become tolerable. As it is seldom possible to completely eliminate risk the aim is just to make it tolerable and manageable.

The action planning activity followed the approach set out below:

- Challenged the action being taken already to see if it is adequate.
- Determined what extra action needs to be taken.
- Assessed to ensure that the action is proportionate to the risk in terms of cost/benefit analysis.
- Ensured that the action is focussed on where the risk needs to be moved to and by when.
- Considered any residual risks and whether any new risks are caused by the action.

Long Term Risks to the Asset

Deferred capital input will have a long-term effect on the Asset.
+
If low cost preventative treatments and lower cost structural maintenance schemes (surface course replacement) are not carried out, at the optimum time the cost of repair in whole life costing terms will be increased.

Detailed action plans for each asset are contained within the lifecycle plans in Appendix F.

Chapter 8 - Performance Monitoring

The Council has a robust performance_management system in place to measure, monitor, assess and compare Best Value Performance Indicators, Local Transport Plan indicators and Local Area Agreements As part of the process of putting together this Transport Asset Management Plan, the performance measures in place for each asset group have been assessed This process has also highlighted those asset groups that have no performance measures in place

Performance information currently takes the form of.

1. Best Value Performance Indicators (BVPIs) measuring the condition of the asset

Best Value Performance Indicators are statutory indicators that every Local Authority has to report performance against target on annually

There are a number of BVPIs that measure the condition of both the carriageway and footway asset Condition surveys are carried out following government requirements. 100% of the principal and non principal classified road network is surveyed each year using a repeatable machine survey and 50% of the unclassified road network by coarse visual inspection survey A 50% sample of the Category 1, 1a and 2 footways is surveyed annually by carrying out a walked detailed visual inspection survey and a 2 year rolling 100% condition result is reported

Condition of Public Rights of Way is assessed for a BVPI and reported as the total lengths of footpaths and other Public Rights of Way which are easy to use by members of the public. This measure of performance is no long required to be reported but the Council are continuing to carry out the procedure until an alternative is put in place.

2. Best Value Performance Indicators (BVPIs) measuring the operational performance of the contractor

Operational indicators relating to street lighting are also reported to the government These measure the number of days taken to repair a street lighting fault for both street lighting faults that are under the control of the Council and where the response time is under the control of the electrical supplier Data is collected and reported on a quarterly basis

3. Best Value Performance Indicators (BVPIs) measuring the provision of facilities for disabled people

The provision of facilities for disabled people at pedestrian crossings is reported to the government as a BVPI. Data is collected and reported on a quarterly basis.

4. Local Transport Plan Performance Indicators

The achievement of actions identified in the Local Transport Plan is monitored using a number of asset based performance indicators.

5. Comprehensive Performance Assessment (CPA) Indicators

The performance of the Council in its own right and in comparison with others is assessed in part by a number of highways related performance indicators. The CPA indicators are:

- Condition of unclassified roads
- Condition of Category 1, 1a and 2 footways
- Percentage of footpaths and other Public Rights of Way that are easy to use
- Percentage of pedestrian crossings with facilities for disabled people
- Percentage of users satisfied with local bus services (those who used the service within last year)
- Percentage of users satisfied with local provision of public transport information (those that have seen/received it)
- All those killed or seriously injured in Road Traffic Collisions
- People slightly injured in Road Traffic Collisions

6. Local Area Agreement (LAA) Indicators

Performance against targets set under Local Area Agreements is assessed using a number of performance indicators that have been agreed with the government. There are currently no LAA indicators or targets directly measuring the condition of the asset but achievement against target may be indirectly affected by asset condition and levels of service set.

7. Key Highways and Transportation Performance Indicators

There are a number of Highways and Transportation Service related performance indicators that the Service Director and Cabinet Member consider to be of high importance to the service and require a strong focus The following are asset condition related key performance indicators that the Cabinet Member and Service Director take a close interest in

- Condition of unclassified roads
- Condition of Category 1, 1a and 2 footways
- Condition of A, B roads
- Condition of unclassed roads

8. Local Highways and Transportation Performance Indicators

There are a number of other highways and transportation performance indicators, which provide useful supplementary information on asset for example.

9. Safety Inspections

Inspectors, carry out safety inspections of the network throughout the year and as part of the survey assign a subjective score for the overall condition of the road they are inspecting The results of these inspections are recorded and reports can be generated to highlight roads that the inspectors consider to be in a poor condition

10. Customer perceptions

Customer perceptions and priorities will be increasingly used to inform and influence the policy and/or strategy for some asset groups There are currently no performance measures in place that specifically relate to customer satisfaction with the condition of the network. However, customer perception of the passenger transport service has been measured and reported for a number of years. Customer perception of contractor performance during major maintenance and improvement schemes has also been measured

11. Accountability and reporting processes

Information is entered into the Highways and Transportation Performance Management System (PMS) by a designated data manager on a quarterly basis where appropriate. The PMS is a sophisticated series of excel spreadsheets, that represent a picture of the current progress against the target, and forecast the outturn for the end of the year and comparisons against previous quarters performance. The PMS requires the data manager to provide reasons for current performance, assess the impact of this level of performance, identify any corrective action required to get back on track and any budget implications.

Summary of Highways and Transportation Performance Indicators relating to asset condition

The table below sets out the performance indicators, indicator type and reference number for each asset group where condition is currently measured and reported. The table also includes indicators that can be used as a proxy for condition such as amount of maintenance work carried out on the asset:

Asset group	Performance indicator description	Indicator type and reference number
Carriageways and footways		
	Condition of A roads as measured by SCANNER (machine) survey	BVPI 223 CPA (Nov 07) LTP2
	Condition of B and C roads as measured by SCANNER (machine) survey	BVPI 224(a) LTP2
	Condition of Unclassified roads as measured by Coarse Visual Inspection	BVPI 224(b) LTP2 < CPA E11
	Condition of category 1, 1a and 2 footways as measured by Detailed Visual Inspection	BVPI 187 CPA E18 LTP2
	Percentage of dangerous damage repaired within 24 hours	
Public Rights of Way		
	Percentage of footpaths and other Public Rights of Way which are easy to use by the public. (No longer required to be reported but to be continued until alternative reporting mechanism is put into place)	BVPI 178

Asset group	Performance indicator description	Indicator type and reference number
Street lighting		
	Number of days taken to repair a street lighting fault (which is under the control of ECC)	
	Average time taken by distribution network operator to repair a street lighting fault	
	Percentage of street lights not working as planned	
Traffic Control Information Systems		
	Percentage of pedestrian crossings with facilities for disabled people	

Table 8.1 summary of performance indicators

BVPI	Best Value Performance Indicator
LTP2	Local Transport Plan Indicator
CPA	Comprehensive Performance Assessment Indicator
LAA	Local Area Agreements Indicator
Local PI	Local Highways and Transportation Service Indicator

Table 8.2 Key to indicator type in table

The condition of the remainder of the asset groups in this Plan do not currently have performance measures or improvement targets identified.

Performance Management System outputs

The Performance Management System produces a number of useful outputs to visually represent performance and these will be further developed.

Current performance against target for asset condition related indicators

Current performance against target for 2007/8 financial year is set out in the table below. The table provides a summary of current or predicted performance against target, red/amber or green (RAG) status and any actions that have been identified to get back on track

Measure of asset condition	Current or predicted performance against target	Improvement or corrective action identified	Notes
Condition of A roads as measured by SCANNER (machine) survey	Predicted performance indicates that we are on track to achieve the target		Difficult to predict as new scanner survey
Condition of B and C roads as measured by SCANNER (machine) survey	Predicted performance indicates that we on track to achieve the target are		Difficult to predict as new scanner survey
Condition of Unclassified roads as measured by Coarse Visual Inspection	Predicted performance indicates that we are on track to achieve target set.		
Condition of category 1, 1a and 2 footways as measured by Detailed Visual Inspection	Predicted performance indicates that we be on track to achieve the target set		
Percentage of dangerous damage repaired within 24 hours	Quarterly performance data indicates that target is likely to be met		
Percentage of footpaths and other Public Rights of Way which are east to use by the public	Target at year end is expected to be met		
Percentage of footpaths and other Public Rights of Way which are easy to use by the public	Target at year end is expected to be met.		

Measure of asset condition	Current or predicted performance against target	Improvement or corrective action identified	Notes
Number of days taken to repair a street lighting fault (which is under the control of ECC)	Target at year end may not be met due to the system of scouting under the new contract producing higher levels of faults being found and therefore an unexpected demand on the contractor's resources.		
Average time taken by distribution network operator (DNO) to repair a street lighting fault	Target at year end is expected to be better by the DNO.		
Percentage of street lights not working as planned	Target is expected to be met.		
Percentage of pedestrian crossings with facilities for disabled people	Target at year end is expected to be met.		

Table 8.3 Summary of current performance against targets

Improvement actions

- Improve the monitoring process to include an assessment and evaluation of lessons learnt and effectiveness of spending efficiencies gained.

- Identify suitable performance indicators to measure the condition of assets that currently do not have this data available The requirements for performance indicators for these assets needs to be carefully assessed to ensure that any measures put into place will add value to decision making and monitoring of performance

- Identify suitable performance indicators to measure efficiency savings

- Further develop and standardise inspection methods for measurement of condition for some larger asset groups, such as structures, to ensure reliable results.

- For those asset condition indicators that contribute to the CPA score – assess the target that must be met in order to contribute to an excellent score and therefore funding and strategy to achieve this (not all indicators need to reach upper quartile position to maintain an excellent score overall for the Borough and assess how to balance this against risk, whole life costs and customer need.

- Develop more customer perception of asset condition related targets to ensure that targets and levels of service reflect customer need or preference.

- Set up a working group (Asset Management Group) led by the Principal Officer Asset Management to lead on the delivery of the improvements and developments in the Plan and to monitor and report on progress to the Senior Management Team.

Chapter 9 - Improvement Action Plan

A key aspect of this Transport Asset Management Plan is to facilitate a process of continuous improvement. This Plan includes a number of improvements that are proposed for implementation over the duration of the plan (2007 - 2011). It is anticipated that improvements will continue to be identified, assessed and programmed on an ongoing basis as this is a 'live' document and as such will be updated on an annual basis.

Key improvement actions for all asset groups

1. Inventory/condition data

1.1 Prepare a business case for additional funding for asset data collection.

1.2 Assess overall costs of asset data collection and review where savings could be made through changing the frequency of data collection, carrying out a sample survey only instead of 100% survey, assessing the level of quality or accuracy required or finding a more cost effective or innovative method for data collection.

1.3 Assess the cost/benefit of data collection for each asset.

1.4 Ideally what inventories are required to control the management of reactive and cyclic maintenance and utilise those if appropriate for asset management.

1.5 Develop a consistent approach to data management through clear process and procedure and ensure data collection and analysis has clearly defined methodology statements and audit trails.

1.6 Carry out an ongoing review and improvement of asset data.

1.7 Consider the long term storage needs for asset data, the interaction of systems where data is currently stored.

1.8 Capturing local knowledge of Engineers and Inspectors, and recording in a formal manner.

1.9 Gap analysis – identify asset information, whole life costing method etc. which is not currently available.

1.10 Final digitisation and reconciliation of the MARCH UK PMS network.

1.11 Input of all previous years survey information into MARCH UK PMC system.

1.12 Formation of plan and implementation to obtain the missing asset data.

1.13 Determine more precise condition data. Determine how scanner can be used for condition data information. Formalise inspection regimes.

1 14 Complete condition indices for bridges

2. Calculation of backlog

2 1 Introduce uniform principles in the way in which backlog is calculated for each asset group At present, assumptions have been made and engineering judgement and knowledge has been applied in order to estimate the backlog of maintenance works. For this to be robust and to provide meaningful information in the future this process must be developed and standardised and the detailed process recorded

3. Valuation of the asset

3.1 Improve asset management information including a clear assessment of when assets will need to be replaced and the most cost effective time to do so. This will provide a higher degree of confidence and an improved valuation figure.

4. Deterioration modelling/Whole Life Costing

4.1 Improve the asset deterioration spreadsheet and introduce asset deterioration modelling systems ensuring that all contributory factors, such as traffic composition, are taken into account.

4 2 Audit the Whole Life Costing Method for highways and develop Whole Life Costing Method for highway structures and bridges.

5. Budget assessment and monitoring

5.1 Take account of new assets within the budget setting process in terms of future maintenance need

6. Consultation and awareness raising

6.1 Provide the Elected Members with information showing how recommendations are made regarding policy and standards and anticipated levels of service that can be delivered with the available budget.

7. Option identification

7 1 Fully develop levels of service for remaining assets

7 2 Cost possible options for service levels for each asset

7 3 Standardise and record inspection methods and categorisations within each asset group to help to measure levels of service consistently.

7.4 Investigate the introduction of an option appraisal methodology to assess and document the long term effects and cost of different investment strategies

8. Forward planning/forward works programme

8.1 Improve on and formalise the development of a 3 year integrated forward works programme for maintenance and integrated transport schemes.

8.2 Assessment and consideration of resource and budget constraints, trading demands between asset groups and delivery of the stated levels of service (value management) in the development of forward works programmes.

8.3 Develop a process for compiling, reviewing and amending an Integrated Forward Works programme.

9. Risk management

9.1 Finalise the risk reporting process.

9.2 Review progress against actions identified in the risk action plans for each asset.

10. Maintenance audits

10.1 Introduce a formal maintenance audit to look at the long term (25 years) revenue cost implications of improvement schemes and new developments to ensure that future maintenance needs are clearly identified and taken into account in the planning process.

11. Performance management and monitoring

11.1 Improve the monitoring process to include an assessment and evaluation of lessons learnt and effectiveness of spending efficiencies gained.

11.2 Identify suitable indicators to measure the condition of assets that currently do not have this data available. The requirements for performance indicators for these assets needs to be carefully assessed to ensure that any measures put into place will add value to decision making and monitoring of performance.

11.3 Identify suitable performance indicators to measure efficiency savings.

11.4 Further develop and standardise inspection methods for measurement of condition for some larger asset groups, such as structures, to ensure reliable results.

11.5 For those asset condition indicators that contribute to the CPA score – assess the target that must be met in order to contribute to an excellent score and therefore funding and strategy to achieve this (not all indicators need to reach upper quartile position to maintain an excellent score overall for the Borough) and assess how to balance this against risk, whole life costs and customer need.

11 6 Develop more customer perception of asset condition related targets to ensure that targets and levels of service reflect customer need or preference

11 7 Set up an Asset Management Group led by the Principal Officer Asset Management to monitor the delivery of the improvement actions

12. Challenging and reviewing current practice

12 1 Challenge and review all aspects of current asset management and decision making practice.

Improvement action planning

An action plan has been developed to identify priorities, timescales and responsible officer for each key improvement action. The Improvement Action Plan (table 10.1) can be found later in this section of the report

Public Rights of Way

All assets need to be recorded and locations identified ideally within a six month period to enable accurate asset management and facilitate prediction of future maintenance needs for Public Rights of Way and cost Furthermore to make full use of this information the GIS Map needs to be checked and updated within the same time period otherwise the danger will be that recorded information from the surveys becomes out of date

Highway Drainage

- Create formal records of 'local knowledge' about where drainage problems/issues are known to exist (often these are informal records held by experienced staff). From this investigation estimate the total drainage stock, and make a corresponding estimate of the gross replacement cost.

- Fund collection of limited inventory based on carriageway hierarchy but given the complexity of highway drainage, attempting to identify every water course and outfall is impracticable Therefore introduce a strategy for acquiring inventory data based on risk.

- Improve the ease of access to inventory data. Store inventory information on a system which is readily accessible by engineers and key staff, such as the Map Info

- Establish a routine condition survey programme on a risk based priority and improve ease of access to condition data

- Ensure that detailed service inspections are being carried out and data is easily accessible.

- Ensure that there is a formal record of all drainage works (schemes other than drainage schemes include elements of drainage works but this is not always clearly recorded).

Cycleways

- Collect condition and location data throughout Trafford.

- Determine the level of importance of the route. A maintenance program can then be organised based on levels of use.

- Identification of on road, off road and shared cycleways.

- GIS mapping of all routes.

- Assess budget requirements to maintain the current cycle network.

Pedestrian Barriers

- Develop comprehensive inventory data and ensure ease of access to this data and create a database to map all the pedestrian barriers.

- Introduce a routine condition survey programme after consideration of innovative/cost saving approaches that may be available to collect this data.

- Decide on future policy/practice including consideration of removal of the asset.

Signs and bollards

- Introduce a routine condition survey programme after consideration of innovative/ cost saving approaches that may be available to collect this data.

- Develop improvement targets for signs and bollards.

- Include inspection of the illuminated asset in the lighting unit inspection.
- Consider the introduction of a programme of planned maintenance works, taking into consideration desired asset condition and anticipated funding.

Structures

The plan for improvement in the management of its stock of highway structures is centred on the implementation of the recommendations of the new code.

- Progress collection of key asset data such as component detail to enable future development of lifecycle plans and whole life costing.
- Further development and standardisation of bridge condition indicators.
- Analysis of the costs of recent schemes as the basis for estimating gross replacement costs
- Explore the possibility of greater regional and national involvement in bridge groups as a means of bringing efficiencies in the development of lifecycle planning, improvements in the training of inspectors and other staff and allowing through the auditing of inspection results more meaningful comparison of services provided by different authorities.

Vehicle restraints (safety fences)

- Make a business case for the funding of the collection of a comprehensive inventory and ease of access to data
- Identify and make a business case for funding a formal programme of detailed service inspections and a process for recording and assessing results.
- Consider frequency of detailed service inspections in line with the Highway Code of Practice for Highway Maintenance Management (July 2005)
- Develop a programme of item replacement/renewal/repair/new installation prioritised on risk, to address any performance gaps. The programme should aim to maximise resources through choosing the appropriate scheme option or combination of scheme options. Programmes should also be identified for a variety of budget scenarios
- Identify corresponding scheme options (item renewal, replacement, repair, new installation) or combinations of options with reference to the budget scenarios Schemes should be allocated funding based on priority of importance and risk, in accordance with the option/s realised from the funding available
- Review and update maintenance programmes annually with reference to new condition data, changes in anticipated budgets, changes in corporate priorities and changes in current and desired service levels.

Carriageways and footways

- Assess data requirements for road and footway condition to assist with the identification of performance measures and setting performance targets which meet all expectations for the service.

- Review current strategy for improving/maintaining road and footway condition that is linked to long term improvements of the network, performance of materials and their lifecycles, value for money and identifying long term targets to aim for (that are linked to customer perception and priority). Assess all the options that are available including time related options utilising a lifecycle costing approach.

- Carry out cost benefit analysis calculations for every major maintenance scheme and consider the various options available for treatment before deciding on approach.

- Determine what would be the optimal target condition for each class of road taking account of technical and public expectations.

- Assess and evaluate the potential effects that demands such as traffic volumes and composition have on the road network in terms of deterioration.

- Consider moving away from historical based budgeting where this still exists to enable more accurate identification of costs based upon delivering specified levels of service for all assets.

- Produce a long term maintenance programme of 5 to 10 years in length.

- Collect and assess data on condition of Category 3 and 4 footways, starting by getting the inspectors to provide a rating of condition on Confirm as part of their safety inspections and then consider introducing an alternative to the DVI survey currently used on Category 1 and 2 footways.

- Use data from safety inspections and numbers of Category 1 defects to provide additional supporting information on the network's condition.

Improvement action planning

Improvement action plans to identify priority, timescales and responsible officer for the improvement actions identified for each asset group will be developed by the end of December 2007. Estimated costs and staff time to implement the actions will be evaluated and incorporated into service plans for final approval by the Senior Management Team.

Improvement action plan for key improvement actions

An action plan has been developed to identify priority, timescales and responsible officer for each key improvement action in the table below:

Key improvement action		Priority rating	Timescale	Officer(s) responsible for delivery	Anticipated additional costs £*
1.	**Inventory/condition data**				
1.1	Finalise digitisation and reconciliation of the MARCH uk pms network and produce condition data on Map Info.	1	March 09	Asset owner led by Principal Officer Asset Management	
1.2	Prepare a business case for additional funding for asset data collection for vehicle restraints (safety fences), Public Rights of Way, pedestrian barriers and trees (these have been identified as priority data).	1	March 09	Asset owners led by Principal Officer Asset Management	
1 3	Assess overall costs of asset data collection and review where savings could be made through changing the frequency of data collection, carrying out a sample survey only instead of 100% survey, assessing the level of quality or accuracy required or finding a more cost effective or innovative method for data collection	2	March 09	All asset owners	
1 4	Assess the cost/benefit of data collection for each asset.	2	March 10	All asset owners	
1 5	Develop a consistent approach to data management through clear process and procedure and ensure data collection and analysis has clearly defined methodology statements and audit trails	3	End March 10	All asset owners	

Key improvement action		Priority rating	Timescale	Officer(s) responsible for delivery	Anticipated additional costs £*
1.6	Carry out an ongoing review and improvement of asset data.	4	Ongoing with an annual review each December	All asset owners	
1.7	Consider the long term storage needs for asset data, the interaction of systems where data is currently stored and cost of purchasing new Confirm modules.	3	March 10	Principal Officer Asset Management	
1.8	Capture local knowledge of Engineers and Inspectors, and recording in a formal manner.	4	Ongoing	Principal Officer Asset Management	
2.	**Calculation of backlog**				
2.1	Standardise the way in which backlog is calculated for each asset group.	2	End September 09	All asset owners led by Principal Officer Asset Management	
3.	**Valuation of the asset**				
3.1	Standardise the calculation methods used to value the assets, be clear on specified levels of service and obtain further guidance on how to value certain asset groups, such as trees and the soft estate, as they appreciate rather than depreciate.	3	End June 09	Principal Officer Asset Management	

Key improvement action		Priority rating	Timescale	Officer(s) responsible for delivery	Anticipated additional costs £*
3 2	Improve asset management information including a clear assessment of when assets will need to be replaced and the cost effective time to do so This will provide a higher degree of confidence and an improved valuation figure	3	Ongoing with annual review each December	Principal Officer Asset Management and Asset owners	
3.3	Formalise requirements for forward projection of budgets, and standardise the calculations used in order to provide this information	3	End March 09	Principal Officer Asset Management	
4.	**Deterioration modelling/Life Cycle (whole life costs)**				
4 1	Improve the whole life costs model by Highways	2	March 2010		
4 2	Improve and introduce asset deterioration modelling systems ensuring that all contributory factors, such as traffic composition, are taken into account	4	Ongoing with an annual review each December	Principal Officer Asset Management and asset owners	
4.3	Develop whole life costs model for Bridges and Highway structures	2	March 2010		
5.	**Budget assessment and monitoring**				
5 1	Place more importance on an asset management approach when setting budgets, including increased emphasis on longer term requirements of the asset and applying appropriate treatment types to minimise whole life cost as well as exploring the business case for alternative investment strategies.	4	Ongoing with an annual review each December	Senior Managers and Service Director	

Key improvement action		Priority rating	Timescale	Officer(s) responsible for delivery	Anticipated additional costs £*
5.2	Take account of new assets within the budget setting process in terms of future maintenance need.	3	Ongoing with an annual review each December	Senior Managers and Service Director	
6.	**Public/stakeholder consultation and awareness raising**				
6.2	Continue and expand consultations with the public and stakeholders on the asset with particular regard to levels of service.	3	Ongoing with an annual review each December	All asset owners	
7.	**Option identification**				
7.1	Fully develop levels of service for remaining assets.	4	End April 10	Asset owners	
7.2	Cost possible options for service levels for each asset.	4	End April 10	Asset owners	
7.3	Standardise and record inspection methods and categorisations within each asset group to help to measure levels of service consistently.	4	Ongoing with an annual review each December	All asset owners led by the Principal Officer Asset Management	
7.4	Investigate the introduction of an option appraisal methodology to assess and document the long term effects and costs of different investment strategies.	3	End December 10	All asset owners led by the Principal Officer Asset Management	
8.	**Forward planning/forward works programme**				
8.1	Improve on and formalise the development of a 5-10 year integrated forward works programme for maintenance and integrated transport schemes.	3	End March 10	All asset owners	
8.2	Further development of whole life costs and optimal treatment costs for each asset group to enable long term future funding need projections.	4	End March 09(Carriageways and footways)	All asset owners	

Key improvement action		Priority rating	Timescale	Officer(s) responsible for delivery	Anticipated additional costs £*
8.3	Assessment and consideration of resource and budget constraints, trading demands between asset group and delivery of the stated levels of service (value management) in the development of forward works programmes	3	December 09 to fit in with budget setting process	Senior Managers and Service Director	
8 4	Develop a process for compiling, reviewing and amending an Integrated Forward Works programme that those involved in developing the programme follow.	3	December 09	Principal Officer Asset Management	
9.	**Risk management**				
9 1	Finalise the risk reporting process in discussion with the Senior Management Team.	1	December 09	Principal Officer Asset Management	
9 2	Review progress against actions identified in the risk action plans for each asset	2	Ongoing with annual review each December	Principal Officer Asset Management in discussion with Senior Management Team	
10.	**Maintenance audits**				
10 1	Develop a formal maintenance audit to look at the long term (25 years) revenue cost implications of improvement schemes and new developments to ensure that future maintenance needs are clearly identified and taken into account in the planning process	3	End April 09	Principal Officer Asset Management	

Key improvement action		Priority rating	Timescale	Officer(s) responsible for delivery	Anticipated additional costs £*
11.	Performance management and monitoring				
11.1	Improve the monitoring process to include an assessment and evaluation of lessons learnt and effectiveness of spending efficiencies gained.	2	End December 09	Principal Officer Asset Management and asset owners	
11.2	Identify suitable performance indicators to measure the condition of assets that currently do not have this data available. The requirements for performance indicators for these assets needs to be carefully assessed to ensure that any measures put into place will add value to decision making and monitoring of performance.	3	End December 09	All asset owners	
11.3	Identify suitable performance indicators to measure efficiency savings.	3	End December 09	All asset owners	
11.4	Further develop and standardise inspection methods for measurement of condition for some larger asset groups, such as structures, to ensure reliable results.	3	End June 09	Asset owners as required	
11.5	For those asset condition indicators that contribute to the CPA score – assess the target that must be met in order to contribute to an excellent score and therefore funding and strategy to achieve this (not all indicators need to reach upper quartile position to maintain an excellent score overall for the Borough). Also assess how to balance this against risk, whole life costs and customer need.	2	End December 09	Senior Managers and Principal Officer Asset Management in discussion with Business Services	

Key improvement action		Priority rating	Timescale	Officer(s) responsible for delivery	Anticipated additional costs £*
11.6	Develop more customer perception of asset condition related targets to ensure that targets and levels of service reflect customer need or preference	4	Ongoing with annual review each December	All asset owners	
12.	**Challenging and reviewing current practice**				
12 1	Challenge and review all aspects of current asset management and decision making practice.	1	Ongoing process with an annual review each December	Senior Management Team, Principal Officer	
13.	**Monitoring the implementation of the TAMP and leading further development**				
13 1	Set up an Asset Management Group led by the Principal Officer Asset Management to monitor the delivery of the improvement actions and further develop the TAMP	1	End March 09	Principal Officer Asset Management	
13 2	Develop individual asset improvement action plans	2	End June 09	All asset owners	
				TOTAL	

Table 9.1 Improvement action plan

* Where no costs are entered against an action, it is anticipated that the activities can be completed by officers within current budgets

Key to priority rating

Each action in the Improvement Action Plan has been given a priority rating This corresponds to the following priority level

Priority rating	Priority level
1	Very high
2	High
3	Medium
4	Low

Table 9.2 Key to priority rating

Monitoring of progress of implementing improvement actions

The Improvement Action Plan will be improved, developed and monitored in the following way:

- The Management Team will have responsibility for and drive the delivery of the improvement actions and further development of the Transport Asset Management Plan. They will discuss the Plan on a regular basis, agree on priority actions and assess funding requirements.

- The Asset Management Engineering manager will lead on delivery of improvements and developments in the Plan and to monitor and report on progress to the Management Team.

- The Service Director will discuss progress with the Cabinet Member on a regular basis.

The Transport Asset Management Plan will be a rolling plan that is reviewed annually each October. This will take the form of a report for the Senior Management Team and will include:

- Progress in delivering the Improvement Action Plan.

- Progress in improving information on the asset.

- Performance of the asset.

- Updated lifecycle plans and level of service documents.

- An option appraisal report.

- Updated Gross and Depreciated asset values and Annualised Depreciation Charge.

- Financial projections.

- Progress on the development of forward programmes of works.

Optimum Plan

How is the optimum plan evolved?

The optimum plan is based on the following,

- Levels of Service required by the public
- Sustainable highway infrastructure
- Meeting BVPI Target
- Risk Management evaluation
- Based on the above forward work programmes can be produced to achieve the aims.

The cost of the Optimum Plan can then be calculated.

Chapter 10 - Forward Works Programmes

The definitive output from a Transport Asset Management Plan, is to have a comprehensive, fully integrated forward works programme in place for all highway assets. This chapter outlines the current position of Trafford Council, along with its aims for a fully Integrated Forward Works Programme.

A number of factors determine the requirements of each asset group in terms of forward works programming:

- Current standards, policies and accepted best practice
- Asset size
- Current condition, desired condition and targets
- Customer requirements/expectations

These are then assessed in line with the available budget to design a delivery programme.

There is currently no standard approach across the highways and transportation service group for the development of forward works programmes. Forward works programmes for maintenance have been developed for some asset groups, others have integrated transport scheme programmes in place as part of the second Local Transport Plan and the remainder have no forward works programme in place at all.

It is good asset management practice to adopt a minimum programme length of 10 years, the level of detail in the plan being less for future years of the programme to reflect the uncertainty of that part of the programme. Years 5 to 10 are intended to highlight long term funding needs rather than be fixed location, specific project needs.

It is recommended that the steps shown in the flowchart on the following page be taken when producing a forward works programme.

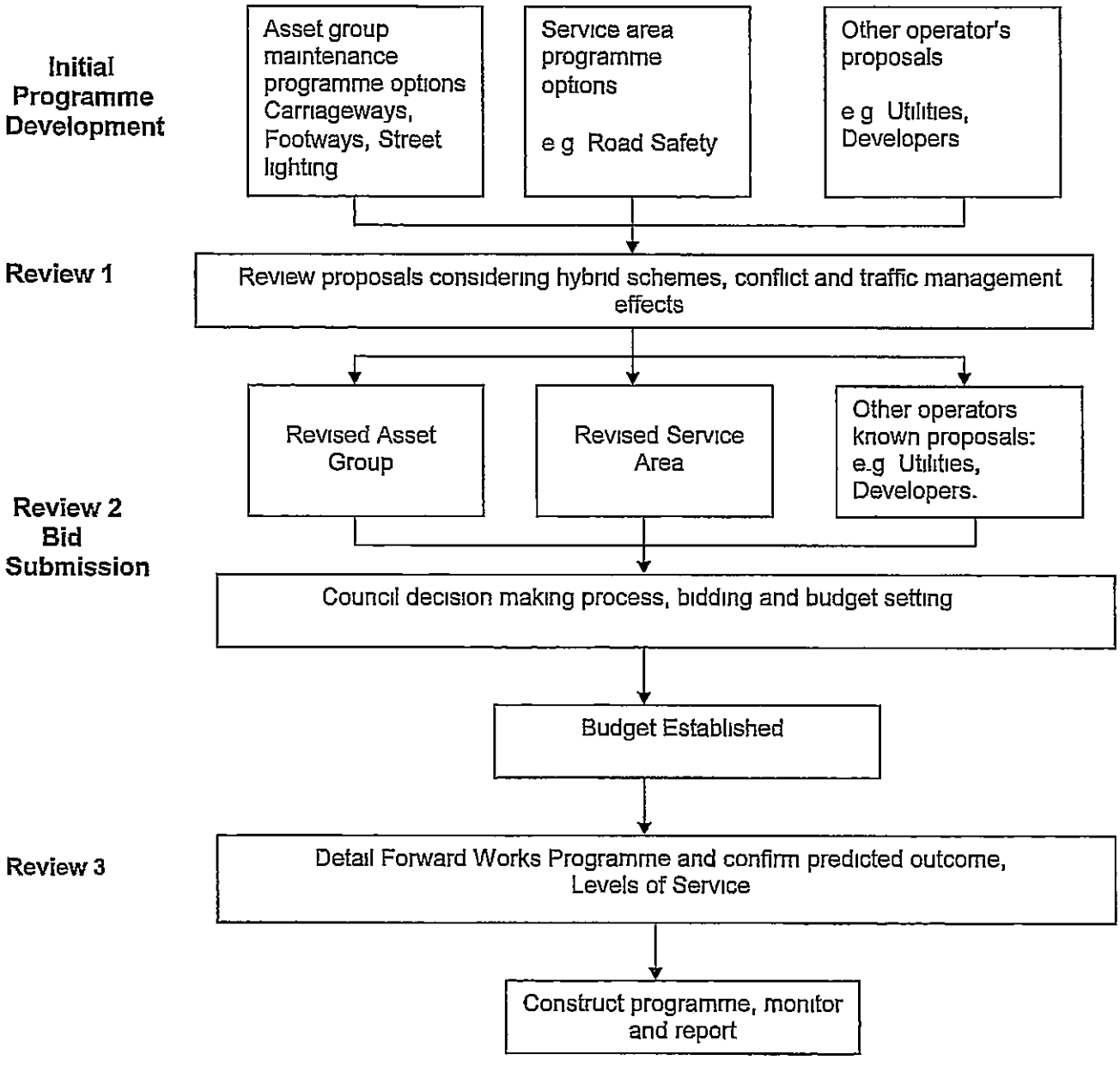

Figure 10.1 Process for formulating a forward works plan

The asset groups with forward works programmes currently in place are:

- Carriageways and footways
- Street lighting

Carriageways and footways

There is a programme in place for carriageways and footways which includes sites requiring maintenance that have been prioritised according to condition data and engineering judgement, anticipated budget, local priorities and targets. The programme is reviewed on an annual basis. The programme also contains a list of reserve schemes which can be implemented if additional funds were to become available.

Street Lighting

The street lighting forward works programme is formulated from the results of structural and electrical testing (once every six years). This data is used to determine priority for column replacement. Additional work is also required to upgrade the existing lighting stock from low pressure sodium lamps and lanterns (SOX) to improve the quality of lighting within Trafford, to reduce light pollution and help reduce maintenance costs.

The cost of this programme is summarised in table 9.1 detailed later in this report.

Highway Structures

The structures forward works programme is an LTP capital funded programme for maintenance and improvement which includes refurbishment, reconstruction and strengthening, and improvements relating to condition and safety. This is a recommended programme of works. The importance of the bridge to the network is the overriding factor in determining priority but where bridges on minor roads have reached the end of their life or bridges have safety issues, they are included in the bridge programme. Once these elements of prioritisation have been established, the scheme is built into the programme using engineering judgement and knowledge. A copy of the proposed programme to 2010/11 can be found in the detailed lifecycle plan for Structures.

Funding requirements for the structures programme are summarised in table 9.1 detailed later in this report.

Cycleways

A five year programme of LTP2 schemes for cycleways has been drawn up, to meet the target for an annualised index of cycling trips and to deliver the overall aim of delivering accessibility. These schemes have been developed by assessing practicality and cost alongside reviewing estimated numbers of trips that implementing the scheme will generate.

A summary of the funding requirements for this programme are included in table 9.1 detailed later in this report.

Public Rights of Way

The required LTP2 Statement has been submitted to Central Government. A Public Rights of way Improvement Plan (ROWIP) has been prepared on behalf of Trafford BC by the Greater Manchester Design Consultancy, this will in the future deliver increased accessibility by achieving an increase in the number of footpaths and other Rights of Way that are easy to use. Stage Two ROWIP is ready and will shortly go out to Consultation.

Chapter 11 - Attainable Asset Management Plan

Method of Allocation and available budget

- If the budget available is below the optimum required based on the calculations in the Asset Management Plan; to achieve all the desired service levels, then the available funds will have to be prioritised, between different sections and areas within these sections.

- A matrix will be produced and a final recommendation for member approval in order to produce the attainable service level plan.

- There is little flexibility in budgets allocated via the LTP integrated transport allocation.

- The PTE "top slice" some integrated transport allocation such as the QBC's.

- In addition, there is a move to ensure that monies allocated in the LTP to achieve LTP targets are spent in the appropriate scheme that the targets are achieved. If monies are not spent in these areas then TMBC could jeopardise future LTP integrated transport allocation. Implementation of many of these schemes will have a future maintenance cost either revenue or capital. (This issue needs to be addressed).

- Generally, funding of the planned structural maintenance for the primary route network is via the LTP allocation whilst funding for the classified B & C's and urban unclassified is via direct Council funding (this is of the order of 90% of the networks).

- The risk analyses process will be used to identify the areas where money should be prioritised.

- The Whole Life Costing Analysis will identify the consequences of under investment and help to determine the allocation of limited funding.

The Process

Stage 1

- Report on optimum budget spend to Executive Member for Technical Services. (Indicate Level of Service)

Stage 2

- Allocate funding if actual funding less than optimum
- Report to Executive Member for Technical Services
- Revise funding allocation as required

Stage 3

- Produce Plan (Final) based on "attainable service levels"
- Budget allocation identified

Identify Programme of Works

- Programme of works identified (based on the available budget)

Determination of the plan

The cost of various treatment methods and the effect of treatments are outlined in Appendix 'D' and this information will allow the setting of the Attainable Asset Management Plan

APPENDIX A

OBJECTIVES FROM THE CORPORATE PLAN

APPENDIX B

SUMMERY OF AVAILABLE INVENTORY INFORMATION

Reliability of the information

Format of the information

How the information is stored

Note:

Available information is identified in The Maintenance Plan

APPENDIX C

BVPI OUTTURN AND QUARTILE DATA

Because of duration of production of this document reliable information to be provided in next update

Survey methods, rules and parameters for calculation of BVPI's have been revised during the course of production of this first TAMP – hence it is thought inappropriate to include information at this stage but will be provided in first updated TAMP. 09/10

APPENDIX D

VALUATION REPORT
COSTS OF REPLACING THE ASSET AND
CURRENT DEPRECIATION LEVEL

(Based on the GM Method)

ASSET VALUATION

INTRODUCTION

1 In accordance with the CSS guidelines for Asset Management and in order to ensure consistency within the LTP, the GM Asset Management group adopted agreed rates and method for calculating the Asset Valuation.

2 Bolton acted as the "lead authority".

3 Bolton's category of roads could not be fully adopted by Trafford based on our current inventory and hence the calculation has been modified, but the principles remain consistent with the joint approach.

4 **Assumptions**

(a) The inventories and existing condition has been based on available data and existing guestimates.
(b) Back streets/alleyways have not been included
(c) PROW have not been included
(d) Park paths etc used as part of the highway network rather than recreation have not been included
(e) See the assumptions made for life cycle costs.

5 **Accountancy Principles**

Gross Replacement Cost (GRC)

Only costs directly attributable to the work are included. This excludes service diversions, feasibility studies, authorities programming and management costs and consultation costs but does include a 10% fee for design and supervisions of the construction works.

1.1 Indexation of unit rates is via a standard price index such as Baxter.

1.2 The replacement cost is based on the replacement with the modern equivalent in accordance with modern design standards and construction methods such that the feature meets the design criteria now required.
(i.e. If the current bridge is a brick is a brick arch assessed at taking 17 Tonne loading but the route on which the structure stands should be capable of taking 40 Tonne vehicles then the modern equivalent asset (MEA) would probably be a pre-stressed concrete beams on concrete abutments designed to take 40 Tonne loading.)

1.3 **Depreciated Replacement Cost (DRC)**

The depreciated replacement cost equals the gross replacement cost – current depreciation
DRC = GRC – Depreciation

1 4 **Depreciation (Conventional Method)**

All street lighting/street furniture/traffic management features are considered to have a readily identifiable service life (finite life) and are routinely replaced at the end of their life (straight line depreciation).

1 5 Annual expenditure required in "steady state" is

$$\left\{ \frac{GRC}{\text{Service life 1}} + \frac{GRC}{\text{Service Life 2}} + \frac{GRC}{\text{Service Life n}} \right\}$$

Where 1 – n are the various inventory items.

1.6 Depreciation (Renewals Accountancy)

Renewals accountancy has been used to estimate depreciation where the infrastructure is maintained at a specific service level by the continued replacement and refurbishment of its components (the level of annual expenditure required to maintain the level of service of the infrastructure to "steady state" is the depreciation per annum

1 7 The service life for street lighting columns has been modified (increased above manufactures service lift based on a painting regime – preventative maintenance which must be added to the annual expenditure required to maintain the asset

1 8 The GRC for street lighting does include for Norweb connections.

AGREED GREATER MANCHESTER METHOD

FOR VALUATION AND ASSET DEPRECIATION

GREATER MANCHESTER HIGHWAY ASSET MANAGEMENT – VALUATION METHOD USED TO FORMULATE THE COMMON RATES USED TO DETERMINE THE GROSS REPLACEMENT COSTS OF THE HIGHWAY ASSET

Background

The "Guidance Document for Highway Infrastructure Valuation" published in July 2005 details which specific assets should be included when valuing the highway network It suggests that for the highway infrastructure, the valuation should be based on standard unit rates per square metre for carriageways and footways and that such costs should be determined using recent costs for the procurement of similar works or current contract values. It further recommends that regional or groups of similar authorities should join together to produce common rates so providing regional or area consistency

The ten highway maintenance Authorities in Greater Manchester meet together under the auspices of the GMADE Highway Maintenance Sub-Group. They decided that all ten Authorities would use common rates to determine the Gross Replacement Costs for their carriageway and footway networks The valuation of street lighting/illuminated signs, bridges and other highway structures and public rights of way will similarly be dealt with by other GMADE sub-groups. No account has been taken of Traffic Signals and Pedestrian Crossing installations, bus stops signs and shelters, which are the responsibility of the appropriate Greater Manchester Transport Unit.

The Concept for Formulating Standard Unit Rates for Carriageways and Footways

The highway network was divided into various categories or "Types" of carriageways as follows, generally based on the width of the carriageway.-

Dual carriageways
Main roads with four lane single carriageways (i e total carriageway width over 11 7 metres wide)
Main roads with two lane single carriageways (i e between 11.69 and 6.75 metres wide)
Secondary roads with two lane single carriageways (i e between 6 74 and 5.51 metres wide)
Minor roads with two lane carriageways less than 5.50 metres wide but over 100 metres in adopted length
Minor roads less than 100 metres in length
Back streets, ancient highways and the like

Traffic Managed -the Main roads, Secondary roads and Minor roads were then further divided depending on whether or not they were traffic managed or calmed i e. the presence of traffic humps, chicanes, cycle lanes, bus lanes, pedestrian refuges or central hatching etc.

Each Type of carriageway was further categorised into one of three "Standards" depending on its usage as based on the carriageway hierarchy (traffic group) For each Standard, (high, medium or low) a specification for carriageway construction was agreed Each of the ten Districts provided current rates, which were then averaged to obtain a basic unit rate per square metre for each Type and Standard of carriageway.

This basic rate only covers "excavation in hard material and carting away" and the provision of "sub base", "base", "binder course" and "surface course"

To allow for other sundry highway assets such as kerbing, road markings, signs, cycle and bus lanes, bus stops and other highway furniture and traffic management/calming measures a further unit cost per square metre was determined.

Typical one-kilometre lengths of each Type of carriageway were surveyed to identify the quantities of these "sundry assets" associated with each specific Type. These additional assets were then valued using the averaged Districts' rates. The total values were divided by typical areas for each Type of carriageway so obtaining the additional cost per square metre. This rate was added to the basic carriageway unit rate to give a standard unit rate per square metre for each Type and Standard of carriageway.

It should be noted that it was agreed that:

- Other than for dual carriageways, which tend to be designed roads, the cost of any highway drainage should not been included as the gullies will be connected to the existing combined sewerage system.
- The reconstruction of all carriageways, including any current concrete and set paved/ overlaid roads, will be in bituminous construction.
- Land values and earthwork costs would not be included in the valuation process.

The rates supplied by the Districts included for all 'Contractors' Costs. Each district also included the percentage needed to cover their professional fees and other client costs. These percentages were averaged and the unit rates increased accordingly.

A similar system has been developed for footways but this is based (regardless of the carriageway traffic group) on

surface material,
location and its relationship to the carriageways
the footway hierarchy /usage,

For footways, the surface material was the first criteria considered. The options are-

- bituminous
- pre-cast concrete flagged
- modular/special flagged
- block pavings
- half bituminous and half bituminous precast concrete flags.

The location for both the bituminous and precast concrete flagged footways was considered next. This identified if the footway:-

(i) has verges on both sides
(ii) adjacent to the carriageway but next to a grass verge
(iii) between the carriageway and a solid highway boundary

The modular/special paving and block paving footways were sub-divided into those within or outside prestigious areas. Finally, the footway usage was considered; two standard specifications were developed, one for the heavily used footways and one for lighter used footways. The footway hierarchy (footway group) was used to assign each footway standard. Heavily used Footways being Categories 1, 1A and 2 whilst the remainder of the footways are considered to be of a lighter usage.

Using averaged unit rates the basic cost per square metre was obtained. Again the sundry assets were obtained for typical one kilometre lengths for each Footway Type and the cost per square metre determined. The two unit rates were aggregated to give a standard unit cost for all the Footway Types, these have been increased to allow for professional fees and client costs

Summary of Carriageway Types

Description	Sub-Group	Carriageway Type	Traffic Group	Usage	Asset Valuation Code
Dual Carriageways	None	A	Any	Heavy	Ah
Four Lane Single Carriageways - over 11 7 metres wide	Not traffic managed	B	2, 3A	Heavy	Bh
	Traffic managed	C	3A	Heavy	Ch
Main Roads - between 11.69 and 6.75 metres wide	Not traffic managed	D	2, 3A 3B	Heavy Medium	Dh Dm
	Traffic managed	E	2, 3.A 3B	Heavy Medium	Eh Em
Secondary Roads - between 6 74 and 5 5 metres wide	Not traffic managed, calmed	F	2, 3A 4B, 4A 4B	Heavy Medium Low	Fh Fm FL
	Traffic managed	G	2, 3A 4B, 4A 4B	Heavy Medium Low	Gh Gm GL
Minor roads less then 5.49 metres wide, longer than 100 metres	Not traffic calmed	H	3B, 4A 4B	Medium Low	Hm HL
	Traffic calmed	I	3B, 4A 4B	Medium Low	Im IL
Minor roads less than 100 metres long		J	4B	Low	JL
Back streets, ancient highways etc		K		Low	KL

Summary of Footway Types

Surface Material	Location	Footway Type	Footway Group	Usage	Asset Valuation Code
Bituminous	Surrounded by grass verge	F1	ii iii, iv	Heavy Lighter	F1h F1L
	between verge and carriageway	F2	ii iii, iv	Heavy Lighter	F2h F2L
	between carriageway and solid boundary	F3	i, iA, ii, iii, iv	Heavy Lighter	F3h F3L
PC flagged paving	surrounded by grass verges	F4	ii iii, iv	Heavy Lighter	F4h F4L
	between verge and carriageway	F5	ii iii, iv	Heavy Lighter	F5h F5L
	between carriageway and solid boundary	F6	i, iA, ii, iii, iv	Heavy Lighter	F6h F6L
Modular /Special paving	Not prestigious	F7	i, iA, ii, iii, iv	Heavy Lighter	F7h F7L
	Prestigious area	F8	i, iA, ii, iii, iv	Heavy Lighter	F8h F8l
Block paving	Not prestigious	F9	i, iA, ii, iii, iv	Heavy Lighter	F9h F9L
	Prestigious area	F10	i, iA, ii, iii, iv	Heavy Lighter	F10h F10L
Half bituminous/PC Flags	Any	F11	i, iA, ii, iii, iv	Heavy Lighter	F11h F11L

Details of the basic systems, unit rates, district individual rates and the formulae for adjusting the unit rates to cater for inflation are detailed in Appendix A.

Highway Asset Management -Valuation - Greater Manchester County Wide Unit Costs

	UNIT	Bolton	Bury	Oldham	Manch.	Rochdale	Salford	Stockport	Tameside	Trafford	Wigan	SUM	Average		
Binder Course, 60 mm	Sq M	6.75	6.39		9.92	7.99	11.42	7.03		10.92	11.22	71.64	8.96		
Surface Course 20 mm	Sq M	6.72	7.06		8.27	6.99	8.27	6.57		5.59	5.7	55.17	6.90		
PC Flags 63 mm	Sq M	33.75	36.77		35.77	37.07	25.62	33		19.2	27.68	248.86	31.11		
Bit and PC Flags - Lighter Used															
Excavate hard material & remove	Cu M	41.97	15.41		54.87	74.8	30.1	41.04		36.35	41.07	335.61	41.95		
Sub Base, 100 mm	Cu M	45	40.15		42.08	62.8	60	44		54.31	43.67	382.01	47.75		
Binder Course, 60 mm	Sq M	6.75	6.39		9.92	7.99	11.42	7.03		10.92	11.22	71.64	8.96		
Surface Course 20 mm	Sq M	6.72	7.06		8.27	6.99	8.27	6.57		5.59	5.7	55.17	6.90		
PC Flags 63 mm	Sq M	33.75	36.77		35.77	37.07	25.62	33		19.2	27.68	248.86	31.11		
Sundry Footway Assets															
Edging	M	9.24	8.32		9.44	11	14.9	9.13		11.5	9.1	82.63	10.33		
Bollards	No	281.25	245		246.16	176	247	275		345.94	300	2116.35	264.54		
Litter Bins	No	450	400		400	440	427	440		342.78	450	3349.78	418.72		
Seat/bench	No	731.25	650		650	715	667	715		527.35	650	5305.6	663.20		
Planter	No	1687.5	1500		1500	1650	1500	1650		1207.63	1250	11945.13	1493.14		
Tree surround	No	562.5	500		500	550	500	550		817.39	400	4379.89	547.49		
Temporary Traffic management	Sum														
-Away from Carriageways													2000.00		
-adjacent to carriageway													5000.00		
- prestigious area													7500.00		
Professional Fees															
additional over total costs	%	12.5	8		10	12	11	10		12.5		76	10.86		

Notes

1. All rates shall be all inclusive of preliminary and all other Contractor's costs
2. The rates for Excavation shall include for any extra over for hard material and removal off site
3. Cost of trimming the formation shall be included in the rates for the Sub Base
4. The Sum for temporary traffic management (Carriageway or footway works) shall cover all associated costs
5. The resultant rates to be used value the specific carriageway and footway types shall be adjusted by a percentage to cover professional fees and other "client" costs

System for Updating the 'Works' Highway Maintenance Contracts

For Carriageway and Footway Works and HRA patching

Inflation between April 2004 and April 2005
incorporating the effects of the Aggregate Levy

No	Activity	Apr-04	Apr-05	Difference	%	Factor	Increase
1	Labour	196	210	14	7 143	0 5	3 57
2	Plant	147	155	8	5 442	0 16	0 87
3	Aggregates	146	149	3	2 055	0 07	0 14
5	Cement	139	143	4	2 878	0 08	0 23
9	Coated stone	202	209	7	3 465	0 19	0 66
				Percentage Increase			**5.47**

Using the Price Adjustment Formulae for Construction Contracts - Monthly Bulletin of Indices

GREATER MANCHESTER HIGHWAY ASSET VALUATION SYSTEM FOR CARRIAGEWAYS

Type	Description	Asset (excluding c/way)	Quantity/km	Unit cost	Cost/km	Cost/m²	Carriageway Specification	Quantity/m²	Unit costs	Cost/m²	Total value/m² (7+11)	Plus 11.06% for Client fees
1	2	3	4	5	6	7	8	9	10.00	11.00	12	13
A	2 lane/ Dual carriageway - based on one carriageway length Width =/7.3 Area/km = 7300m² any carriageway hierarchy code	Kerbs (m)	1950	20.01	39019.5		Heavy Usage					
		Verges (1m wide) (m²)	1000	6.88	6880		Excavate hard material (m³)	0.9	46.39	41.75		
		Highway Drainage (m)	1500	124.37	186555		Sub base.....600 mm (m³)	0.6	43.16	25.90		
		Manholes @300m centres (no)	4	2465.83	9863.32		Base.....200 mm	1	24.65	24.65		
		Gullies 4 @ 30m centres (no)	23	334.68	7697.64		Binder Course... 60 mm	1	7.84	7.84		
		Gully connections (m)	80	90.81	7264.8		Surface Course...40 mm	1	8.56	8.56		
		1/2 Central res. (1.5m wide) m²	750	22.82	17115					108.70		
		Crash Barriers (m)	185	115.73	21410.05		TOTAL				£154.27	£171.33
		Railings (m)	35	74.87	2620.45							
		Road signs - large	12	456.19	5498.28							
		White lining - centre (m)	1000	0.68	680							
		edges (m)	1000	0.68	680							
		symbols (no)	13	20.69	268.97							
		hatching (m)	250	1.42	355							
		central refuges (no)	2	4371.04	8742.08							
		Temp traffic management (sum)	0.5	36046.00	18023							
	7300	TOTAL			262140.84	£45.57						
B	4 lane/ single carriageway (over 11.7m wide) not traffic managed Width =2/5.5 Area/km = 11000m²	Kerbs (m)	1996	20.01	39939.96		Heavy Usage					
		Verges (1m wide) (m²)	1996	8.88	17724.48		Excavate hard material (m³)	0.9	46.39	41.75		
		Gullies 2 @ 30m centres (no)	43	334.88	14391.24		Sub base.....600 mm	0.6	43.16	25.90		
		Gully connections (m)	250	90.81	22702.5		Base.....200 mm	1	24.65	24.65		
		Road signs etc (large) (no)	2	458.19	916.38		Binder Course... 60 mm	1	7.84	7.84		
		Road signs etc (small) (no)	6	169.34	1016.04		Surface Course...40 mm	1	8.56	8.56		
		White lining - centre (m)	3245	0.68	2206.6					108.70		
		edges (m)	1955	0.68	1329.4		TOTAL				£121.27	£134.68
		symbols (no)	8	29.69	237.52							
		hatching (m)	165	1.42	234.3							
		central refuges (no)	1	4371.04	4371.04							
		Temp traffic management (sum)	1	33216.88	33216.88							
					138286.34							

GREATER MANCHESTER HIGHWAY ASSET VALUATION SYSTEM FOR CARRIAGEWAYS												
Type	Description	Asset (excluding c/way)	Quantity/km	Unit cost	Cost/km	Cost/m²	Carriageway Specification	Quantity/m²	Unit costs	Cost/m²	Total value/m² (7+11)	Plus 11.06% for Client fees
1	2	3	4	5	6	7	8	9	10 00	11 00	12	13
	11000	TOTAL				£12.57						
C	4 lane/ single carriageway (over 11 7m wide) Traffic managed Width =2/5 5 Area/km = 11000m²	Kerbs (m)	2000	20 01	40020		Heavy Usage					
		Gullies	33	334 68	11044 44		Excavate hard material (m³)	0 9	46 39	41 75		
		Gully connections (m)	200	90 81	18162		Sub base 600 mm	0 6	43 16	25 90		
		Road signs etc (small) (no)	10	169 34	1693 4		Base 200 mm	1	24 65	24 65		
		White lining - centre (m)	2094	0 68	1423 92		Binder Course 60 mm	1	7 84	7 84		
		edges (m)	792	0 68	538 56		Surface Course 40 mm	1	8 56	8 56		
		symbols (no)	23	29 69	662 87					108.70		
		hatching (m)	945	1 42	1341 9		TOTAL				£122 37	£135 90
		Cycle lane	1861	2 00	3722							
		Bus stop marking	24	509 65	12231 6							
		central refuges (no)	4	4371 04	17484 16							
		Raised bus stops	6	1471 99	8831 94							
		Temp traffic management (sum)	1	33216 88	33216 88							
	11000	TOTAL			150393 67	£13 67						
D	Main road 2 lane single carriageway (between 11 69m 6 75m wide) not traffic managed Ave width = 7 3m Area/km = 7300m²	Kerbs (m)	1871	20 01	37438 71		Heavy Usage					
		Verges (1m wide) (m²)	1238	6 66	6517 44		Excavate hard material (m³)	0 9	46 39	41 75		
		Gullies 2 @ 30m centres (no)	38	334 68	12717 84		Sub base 600 mm	0 6	43 16	25 90		
		Gully connections (m)	140	90 81	12713 4		Base 200 mm	1	24 65	24 65		
		Road signs etc (large) (no)	2	458 19	916 38		Binder Course 60 mm	1	7 84	7 84		
		Road signs etc (small) (no)	7	169 34	1185 38		Surface Course 40 mm	1	8 56	8 56		
		Railings (m)	118	74 87	8834 66					108 70		
		White lining - centre (m)	3000	0 68	2040		TOTAL				£113 83	
		edges (m)	2000	0 68	1360							£126 41
		symbols (y no)	9	29 69	267 21		Medium Usage					
							Excavate hard material (m³)	0 72	46 39	33 40		
							Sub base 475 mm	0 475	43 16	20 50		
		Temp traffic management (sum)	1	33216 88	33216 88		Base 150 mm	1	18 24	18 24		
					119,207		Binder Course 60 mm	1	7 84	7 84		
	7300	TOTAL				£5.13	Surface Course 35 mm	1	7 11	7 11		
										87.09		

GREATER MANCHESTER HIGHWAY ASSET VALUATION SYSTEM FOR CARRIAGEWAYS												
Type	Description	Asset (excluding c/way)	Quantity/km	Unit cost	Cost/km	Cost/m²	Carriageway Specification	Quantity/m²	Unit costs	Cost/m²	Total value/m² (7+11)	Plus 11.86% for Client fees
1	2	3	4	5	6	7	8	9	10.00	11.00	12	13
							TOTAL				£92.22	£102.42
E	Main road 2 lane single carriageway (between 11.69m 6.75m wide)	Kerbs (m)	1459	20.01	29194.59		Heavy Usage					
		Gullies 2 @ 30m centres (no)	50	334.68	16734		Excavate hard material (m³)	0.9	46.39	41.75		
		Gully connections (m)	180	90.81	16345.8		Sub base.....600 mm	0.6	43.16	25.90		
		Road signs etc (large) (no)	1	458.19	458.19		Base.....200 mm	1	24.65	24.65		
		Road signs etc (small) (no)	9	169.34	1524.06		Binder Course... 60 mm	1	7.84	7.84		
		White lining - centre (m)	1000	0.68	680		Surface Course...40 mm	1	8.56	8.56		
	Traffic managed	edges (m)	578	0.68	393.04					108.70		
		symbols (y no)	7	29.69	207.83		TOTAL				£123.13	£136.75
		hatching (m)	230	1.42	326.6		Medium Usage					
	Ave Width =7.3m	central refuges (no)	1	4371.04	4371.04		Excavate hard material (m³)	0.72	46.39	33.40		
	Area/km =	Pedestrian Crossing (no)	2	835.75	1671.5		Sub base.....475 mm	0.475	43.16	20.50		
	7300m²	Zig zag markings (m)	180	1.26	226.8		Base..... .....150 mm	1	18.24	18.24		
							Binder Course... 60.mm	1	7.84	7.84		
		Temp traffic management (sum)	1	33216.88	33216.88		Surface Course...35 mm	1	7.11	7.11		
					105350.33					87.09		
	7300	TOTAL				£14.43	TOTAL				£101.52	£112.75
							Heavy Usage					
F	Secondary Road - 2 lane/ single carriageway (between 6.74m & 5.5 m wide)	Kerbs (m)	1802	20.01	36058.02		Excavate hard material (m³)	0.9	46.39	41.75		
		Gullies 2 @ 30m centres (no)	44	334.68	14725.92		Sub base.....600 mm	0.6	43.16	25.90		
		Gully connections (m)	150	90.81	13621.50		Base.....200 mm	1	24.65	24.65		
		Railings (m)	101	74.87	7561.87		Binder Course... 60 mm	1	7.84	7.84		
		Road signs etc (small) (no)	10	169.34	1693.4		Surface Course...40 mm	1	8.56	8.56		
		White lining - centre (m)	1000	0.68	680		TOTAL			108.70	£124.00	£137.71
		edges (m)	294	0.68	199.92		Medium Usage					
	Ave Width = 6m	symbols (y no)	3	29.69	89.07		Excavate hard material (m³)	0.72	46.39	33.40		
	Area/km						Sub base.....475 mm	0.475	43.16	20.50		
	6000m²	Temp traffic management (sum)	1	30786.25	30786.25		Base..... .....150 mm	1	18.24	18.24		
							Binder Course... 60.mm	1	7.84	7.84		
					105415		Surface Course...35 mm	1	7.11	7.11		
	6000	TOTAL				£15.30	TOTAL			87.09	£102.39	£113.72
							Low Usage					
							Excavate hard material (m³)	0.45	46.50	20.93		

GREATER MANCHESTER HIGHWAY ASSET VALUATION SYSTEM FOR CARRIAGEWAYS												
Type	Description	Asset (excluding c/way)	Quantity/km	Unit cost	Cost/km	Cost/m²	Carriageway Specification	Quantity/m²	Unit costs	Cost/m²	Total value/m² (7+11)	Plus 11 06% for Client fees
1	2	3	4	5	6	7	8	9	10 00	11 00	12	13
							Sub base 275 mm	0 275	43 33	11 92		
							Base 80 mm	1	9 61	9 61		
							Binder Course 60 mm	1	7 50	7 50		
							Surface Course 35 mm	1	7 11	7 11		
							TOTAL			57 06	£72 36	£80.36
G	Secondary Road - 2 lane/ single carriageway (between 6 74m & 5 5 m wide) traffic managed/calmed Ave Width = 6m Area/km 6000m²	Kerbs (m)	1778	20 01	35577 78		Heavy Usage					
		Gullies 2 @ 30m centres (no)	54	334 68	18072 72		Excavate hard material (m³)	0 9	46 39	41 75		
		Gully connections (m)	182	90 81	16527 42		Sub base 600 mm	0 6	43 16	25 90		
		Road signs etc (small) (no)	10	169 34	1693 4		Base 200 mm	1	24 65	24 65		
		White lining - centre (m)	1000	0 68	680		Binder Course 60 mm	1	7 84	7 84		
		edges (m)	524	0 68	356 32		Surface Course 40 mm	1	8 56	8 56		
		symbols (y no)	10	29 69	296 9		TOTAL			108 70	£133 01	£147 72
		at road junctions	22	1 47	32 34		Medium Usage					
		Traffic platforms	9	336 92	3032 28		Excavate hard material (m³)	0 72	46 39	33 40		
		triangular white markings	36	15 06	542 16		Sub base 475 mm	0 475	43 16	20 50		
		mini round about - raised	1	504 75	504 75		Base 150 mm	1	18 24	18 24		
		white arrows	3	24 33	72 99		Binder Course 60 mm	1	7 84	7 84		
		zebra crossings	1	705 50	705 5		Surface Course 35 mm	1	7 11	7 11		
		zig zag lines	90	1 26	113 4		TOTAL			87 09	£111 41	£123.72
		bus lay-bys	9	4052 43	36471 87		Low Usage					
		white lettering	54	6 55	353 7		Excavate hard material (m³)	0 45	46 50	20 93		
		double yellow lines	66	0 97	64 02		Sub base 275 mm	0 275	43 33	11 92		
							Base 80 mm	1	9 61	9 61		
		Temp traffic management (sum)	1	30786 25	30786 25		Binder Course 60 mm	1	7 50	7 50		
							Surface Course 35 mm	1	7 11	7 11		
							TOTAL			57 06	£81 37	£90.37
	6000	TOTAL			145883 8	£24.31						
H	Minor Road 2 lane/ single carriageway, over 5 49 m wide Average Width 5 0 m Area/km	Kerbs (m)	938	20 01	18769 38		Medium Usage					
		Gullies 2 @ 30m centres (no)	73	334 68	24431 64		Excavate hard material (m³)	0 72	46 39	33 40		
		Gully connections (m)	200	90 81	18162		Sub base 475 mm	0 475	43 16	20 50		
		Road signs etc (small)	0	169 34	0		Base 150 mm	1	18 24	18 24		
		White lining - centre (m)	300	0 68	204		Binder Course 60 mm	1	7 84	7 84		
		edges (m)	16	0 68	10 88		Surface Course 35 mm	1	7 11	7 11		
		symbols (y no)	1	29 69	29 69					87.09		
		at road junctions	22	1 47	32 34		TOTAL				£105 23	£116 87
							Low Usage					

GREATER MANCHESTER HIGHWAY ASSET VALUATION SYSTEM FOR CARRIAGEWAYS												
Type	Description	Asset (excluding c/way)	Quantity/km	Unit cost	Cost/km	Cost/m²	Carriageway Specification	Quantity/m²	Unit costs	Cost/m²	Total value/m² (7+11)	Plus 11.06% for Client fees
1	2	3	4	5	6	7	8	9	10.00	11.00	12	13
	5000m²	Temp traffic management (sum)	1	29059.38	29059.38		Excavate hard material (m³)	0.45	46.50	20.93		
							Sub base.....275 mm	0.275	43.33	11.92		
					90699.31		Base.....80 mm	1	9.61	9.61		
	5000	TOTAL				£18.14	Binder Course... 60 mm	1	7.50	7.50		
							Surface Course...35 mm	1	7.11	7.11		
							TOTAL			57.06	£75.20	£83.52

GREATER MANCHESTER HIGHWAY ASSET VALUATION SYSTEM FOR CARRIAGEWAYS

Type	Description	Asset (excluding c/way)	Quantity/km	Unit cost	Cost/km	Cost/m²	Carriageway Specification	Quantity/m²	Unit costs	Cost/m²	Total value/m² (7+11)	Plus 10.86% for Client fees
1	2	3	4	5	6	7	8	9	10 00	11 00	12	13
I	Minor Road	Kerbs (m)	1302	20 01	26053 02		**Medium Usage**					
	2 lane/ single	Gullies 2 @ 30m centres (no)	63	334 68	21084 84		Excavate hard material (m³)	0 72	46 39	33 40		
	carriageway over	Gully connections (m)	180	90 81	16345 8		Sub base 475 mm	0 475	43 16	20 50		
	5 49m wide				0		Base 150 mm	1	18 24	18 24		
	traffic managed/	Road signs etc (small) (no)	18	169 34	3048 12		Binder Course 60 mm	1	7 84	7 84		
	calmed	White lining - centre (m)	343	0 68	233 24		Surface Course 35 mm	1	7 11	7 11		
		edges (m)	414	0 68	281 52					53 69		
	Average Width	symbols (no)	19	29 69	564 11		TOTAL				£75 79	£84.02
	5 0 m	at road junctions	55	1 47	80 85							
	Area/km	road humps	10	1272 97	12729 7							
	5000m²	double yellow lines	269	0 97	260 93		**Low Usage**					
		triangular markings to humps	50	15 06	753		Excavate hard material (m³)	0 45	46 50	20 93		
		Temp traffic management (sum)	1	29059 38	29059 38		Sub base 275 mm	0 275	43 33	11 92		
					110494 51		Base 80 mm	1	9 61	9 61		
	5000	TOTAL				£22 10	Binder Course 60 mm	1	7 50	7 50		
							Surface Course 35 mm	1	7 11	7 11		
		[bus stops, shelters and traffic lights - omitted]								57.06		
							TOTAL				£79 16	£87 76
J	Minor Road	Kerbs (m)	1008	20 01	20170 08							
	2 lane/ single	Gullies (no)	64	334 68	21419 52		**Low Usage**					
		Gully connections (m)	180	90 81			Excavate hard material (m³)	0 45	46 50	20 93		
	carriageway	Road signs etc (small) (no)	4	169 34	677 36		Sub base 275 mm	0 275	43 33	11 92		
	less than 100m	road humps	2	1272 97	2545 94		Base 80 mm	1	9 61	9 61		
	average width =	triangular markings to humps	8	15 06	120 48		Binder Course 60 mm	1	7 50	7 50		
	5 0 m	turning head	10	3716 32	37163 2		Surface Course 35 mm	1	7 11	7 11		
	Area/km				0					57.06		
	5000m²						TOTAL				£74 80	£82.92
		Temp traffic management (sum)	1	6600	6600							
					88696 58							
	5000	TOTAL				£17.74						

GREATER MANCHESTER HIGHWAY ASSET VALUATION SYSTEM FOR CARRIAGEWAYS													
Type	Description	Asset (excluding c/way)	Quantity/km	Unit cost	Cost/km	Cost/m²	Carriageway Specification	Quantity/m²	Unit costs	Cost/m²	Total value/m² (7+11)	Plus 10.86% for Client fees	
1	2	3	4	5	6	7	8	9	10.00	11.00	12	13	
K	Back street & Ancient Highways average I Width = 4.5m Area/km 4500m² 4500	Kerbs (m) Gullies 2 @ 100m centres (no) Gully connections (m) Footways (2/1m wide) (m²) TOTAL	2000 64 120	16.14 342.33 75.92 16.28	32280 21909.12 9110.4 0 63299.52	£14.07	Low Usage Excavate hard material (m²) Sub base.....275 mm Base.....80 mm Binder Course... 60 mm Surface Course...35 mm TOTAL	0.45 0.275 1 1 1	46.50 43.33 9.61 7.50 7.11	20.93 11.92 9.61 7.50 7.11 57.06	£71.13	£78.85	

bus stops, shelters and traffic lights - omitted	

To determine average widths, & unit costs for Carriageway types

Principal Roads

	Length	Av Width, m	L x W = A	Factor F	A x F	L x F	Unit Cost	Unit Cost x AF
Ah	43 456	8 05	349.8208	0 84	293.849	36.503	171.33	50345 230
Bh	21 423	13 41	287.28243	0 75	215 462	16 067	134 68	29018 398
Ch	13.335	12.28	163.7538	1	163 754	13 335	135 9	22254 141
Dh	65 923	9 16	603.85468	0 76	458 930	50 101	126 41	58013.285
Eh	5 537	10.32	57 14184	1	57 142	5.537	136.75	7814.147
Fh	5 772	6.13	35.38236	0.6	21.229	3.463	137 71	2923 503
					1210 366	125 007		170368.704
Sub total		**9.682**					**140.758**	
Average								

Other classified Roads

	Length	Av Width, m	L x W = A	Factor F	A x F	L x F	Unit Cost	Unit Cost x AF
Ah	43 456	8 05	349.8208	0 16	55 971	6 953	171 33	50345 230
Bh	21.423	13 41	287.28243	0.25	71 821	5 356	134.68	29018.398
Ch	13 335	12 28	163.7538	0	0 000	0 000	135.9	22254.141
Dh	65 923	9 16	603.85468	0 24	144.925	15.822	126.41	58013 285
Eh	5.537	10.32	57.14184	0	0 000	0 000	136.75	7814.147
Fh	5 772	6 13	35 38236	0.4	14 153	2 309	137 71	2923 503
Dm	92 111	8 3	764.5213	0.42	321 099	38 687	102 42	32886.954
Em	23 475	7 86	184.5135	0	0.000	0.000	112.75	0.000
FL	157 288	6.5	1022.372	0	0.000	0 000	80.36	0 000
Fm	68.641	6.62	454.40342	0 2	90 888	13 728	113 72	10334 951
Gm	29.676	6.43	190.81668	0	0 000	0 000	123.75	0 000
Hm	23.334	5.06	118.07004	0.3	35 421	7 000	116.87	4139 654
					734 271	89 854		86892.913
Sub total		**8.172**					**118.339**	
Average								

Other classified Roads

	Length	Av Width, m	L x W = A	Factor F	A x F	L x F	Unit Cost	Unit Cost x AF
Ah	43.456	8.05	349.8208	0	0.000	0.000	171.33	0.000
Bh	21.423	13.41	287.28243	0	0.000	0.000	134.68	0.000
Ch	13.335	12.28	163.7538	0	0.000	0.000	135.9	0.000
Dh	65.923	9.16	603.85468	0	0.000	0.000	126.41	0.000
Eh	5.537	10.32	57.14184	0	0.000	0.000	136.75	0.000
Fh	5.772	6.13	35.38236	0	0.000	0.000	137.71	0.000
Dm	92.111	8.3	764.5213	0.58	443.442	53.424	102.42	45415.317
Em	23.475	7.86	184.5135	1	184.514	23.475	112.75	20803.897
FL	157.288	6.5	1022.372	1	1022.372	157.288	80.36	82157.814
Fm	68.641	6.62	454.40342	0.8	363.523	54.913	113.72	41339.806
Gm	29.676	6.43	190.81668	1	190.817	29.676	123.75	23609.748
GL	68.944	6.49	447.44656	1	447.447	68.944	90.37	40435.746
Hm	23.334	5.06	118.07004	0.7	82.649	16.334	116.87	9659.192
HL	125.033	4.95	618.91335	1	618.913	125.033	83.52	51691.643
Im	10.233	5.1	52.1883	1	52.118	10.233	84.17	4392.689
IL	54.993	4.91	270.1563	1	270.016	54.993	87.91	23737.074
JL	85.788	5.77	494.99676	1	494.997	85.788	83.07	41119.381
					4170.957	6870.101		384362.307
Total								
Average			**6.132702379**				**92.154**	

Back Streets

Length	Av Width, m	L x W = A	Factor F	A x F	L x F	Unit Cost	Unit Cost x AF
98.638	3.9	384.6882	1			78.99	

To determine average widths, & unit costs for Carriageway types

Footways – Heavy (categories i, ia and ii)

	Lengths km			Av Width, m		L x W = A	Unit Cost		
	L F/way	R F/way	Total	L F/way	R F/way	Total			
F1h	1.388	0.645	2.033	2 21	2	2.105	4 279465	55.31	236 697209
F2h	6 41	4 129	10 539	2 24	2.3	2 27	23 92353	51.11	1222 73162
F3h	45.982	38 318	84.3	2 4	2.34	2 37	199.791	45.34	9058 52394
F4h	0.257	0 412	0 669	1 88	1.9	1.89	1.26441	84.01	106.223084
F5h	1 6	1 946	3 546	2 18	2.2	2 19	7 76574	80.09	621.958117
F6h	13.094	11.305	24.399	2 72	2.56	2 64	64 41336	74 45	4795 57465
F11h	3.374	3 008	6 382	2 45	2.46	2.455	15 66781	61.45	964 197027
Sub totals			131 868				317 10532		
Average						**2.405**		**53.629**	
F7h	0	0	0					0	0
F8h	3.168	2.254	5 422	5 71	3.6	4 655	25.23941	91 62	2312.43474
F9h	0.52	0.57	1.09	5 09	3 3	4.195	4.57255	68.8	314 56144
F10h	0 436	0 474	0.91	2 19	1 96	2 075	1 88825	79 55	150.266935
Sub totals			7.422				31.700		2777.293
Average						**4.271**		**86.611**	
Overall Averages			139.29			**2.504**		**56.717**	

Footways – Lighter Usage (Categories iii, iv and v)

	Lengths km			Av Width, m		L x W = A	Unit Cost		
	L F/way	R F/way	Total	L F/way	R F/way	Total			
F1L	10.18	9.9767	19.947	1.86	1.85	1.855	37.001685	44.88	1660.636
F2L	80.124	74.696	154.82	2.02	1.99	2.005	310.4141	40.68	12627.646
F3L	466.221	408.4	874.621	2.07	2.07	2.07	1810.4655	34.91	63203.350
F4L	4.489	3.337	7.826	1.79	1.93	1.86	14.55636	73.86	1076.133
F5L	34.264	27.619	61.883	1.97	1.96	1.965	121.6001	70.08	7521.735
F6L	122.789	100.579	223.268	2.05	2.04	2.045	456.78756	64.44	29435.390
F11L	30.86	30.298	61.158	2.36	2.44	2.4	146.7792	51.58	7570.8718
Sub totals			1403.623				2897.604		124094
Average						**2.064**		**42.827**	
F7L	0	0	0		0				0
F8L	0		0		0	0	0		0
F9L	1.519	1.161	2.68	2.45	1.72	2.085	5.588	59.76	333.927
F10L	33.395	34.69	68.085	1.43	1.4	1.415	96.340	70.55	9796.806
Sub totals			70.765				101.928		124094
Average						**1.440**		**96.958**	
Overall Average			1474.388				2999.5325		
						2.034		**43.749**	

Updating the unit rates for annual inflation

GMADE Asset Management sub group agreed that the following system and formulae would be used to adjust the Unit Rates used for the 2006/07 valuation. It was agreed that to average the costs throughout the year the September values would be used as the base date for calculating the annual increases

Inflation between September 2005 and September 2006 incorporating the effects of the Aggregate Levy

No	Activity	Sept 05	Sept 06	Difference	%	Factor	Increase
1	Labour	228				0 5	
2	Plant	163				0 16	
3	Aggregates	144				0 07	
5	Cement	154				0 08	
9	Coated stone	219				0 19	
				Percentage Increase			

Using the Price Adjustment Formulae for Construction Contracts - Monthly Bulletin of Indices

Calculating the Gross Replacement Costs

The carriageway areas for each Carriageway Type and each Standard are determined using either existing data bases or from site surveys, (i e determined for each "asset valuation code") These areas are then valued using the specific GMADE average Unit Costs and totalled to determine the overall figure for the network

A similar calculation is made for the footway network, based on material Type and Standard

The GMADE Asset Management sub group took the view that as so few Districts had any records of their Back Streets, most of which are not adopted and those that are usually need complete replacement so will not have any net value, they should be omitted.

Calculating the cost of arresting deterioration and removing the maintenance backlog

The "guidance document" recommends that the Best Value PI results shall be used to determine the costs needed to maintain the network to an acceptable level (or PI value) This necessitates using the highway classifications are a basis for this calculation

- For each Class of Road the average carriageway widths and average unit costs of replacement were derived by pro ratatering the various values for each Type and Standard. Similarly for the Heavily used footways (i e categories I ,IA and II) and Lighter used footways (categories III, IV and V) the average widths and unit costs of replacement were determined

- For each Class of Road the length of carriageway having a zero residual life was obtained from the latest Best Value results To this figure was added to length treated during the year to identify the total length of annual need This was then reduced to allow for an acceptable Best Value PI figure of 5% Using the average carriageway widths and unit rates the funds needed to bring each carriageway network up to an acceptable standard was obtained

- Most Footways are not subjected to the Best Value PI requirements so the GMADE Asset management sub group took the view that the cost of brining the footway networks should be based on the Condition survey results obtained by Manchester This indicated that 31.4% should be maintained The total costs are calculated for the Heavy used and Lighter used networks separately

THE DETERMINATION OF THE COSTS OF ARRESTING DETERIORATION AND REMOVING THE MAINTENANCE BACKLOG

By analysing the breakdown of the different Types and Standards of carriageway and footway lengths the following has been determine.

Road Class	Average Width	Average Unit Replacement Cost
Principal Roads	9.682 m	£140.508 / sq m
Other classified roads	8.172m	£118.129 / sq m
Unclassified	6.133 m	£91.991 / sq m
Back streets and ancient highways	3.9 m	£78.85 / sq m
Footways – Category i, iA & ii – general	2.405 m	£53.532 / sq m
Footways – Category i, iA & ii – special pavings etc.	4.271 m	£87.449 / sq.m
Footways – Category iii, vi & v – general	2.064 m	£42.745 / sq m

Principal Roads

Surveyed carriageway length = 127,829 km

The latest CVI condition survey used to obtain the 2003/04 BV PI value of 13.29% identified a length with zero residual life as	17.101 km	
Length of highway treated during 2003/04	5.038	
Total length of deterioration and backlog	22.139	
Assume the BV PI value of 5% would be satisfactory so reduce the defective length which would have to be replaced by 127.829x.05=	6.391	
Net length currently needing replacement	**15.748 km**	
Average width = 9.683 metres Average unit cost of replacement = £140.508 per square metre		
Therefore the cost of arresting Deterioration and removing the Maintenance Backlog will be 15748 x 9.683 x £1140.508		**£21,425,767**

Other Classified Roads

Survey Carriageway length = 83.812 km

The CVI condition survey used to obtain the 2004/05 BV PI value of 20.68% identified a length with zero residual life as	17.335 km	
Length of highway treated during 2004/05	3.319	
Total length of deterioration and backlog	20.654	
Assume the BV PI value of 5% would be satisfactory so reduce the defective length which would have to be replaced by 83.812 x .05=	4.191	
Net length currently needing replacement	**16.463 km**	
Average width = 8.172 metres Average unit cost of replacement = £118.129 per square metre		
Therefore the cost of arresting Deterioration and removing the Maintenance Backlog will be 16463 x 8.172 x £118.129		**£15,892,559**

Unclassified Roads

Total length of network = 748 558 km

The CVI condition survey of the whole of the network in 2004/05 gave a BV PI value of 20 488% identified a length with zero residual life as	154.46 km	
Length of highway treated during 2003/04	5 33	
Total length of deterioration and backlog	159.79	
Assume the BV PI value of 5% would be satisfactory so reduce the defective length which would have to be replaced by 748 555 x 05=	37 43	
Net length currently needing replacement	**16.463 km**	
Average width = 6 133 metres Average unit cost of replacement = £91 991 per square metre		
Therefore the cost of arresting Deterioration and removing the Maintenance Backlog will be 122360 x 6 133 x £91.991		**£69,033.163**

Back Streets

As a matter of policy the only maintenance undertaken as to ensure the safe passage of highway users, the network is recorded separately of the Length of Adopted Highways return made annually to the Department for Transport, therefore the following assumptions have been made as to their conditional and the acceptable standard when determining the likely costs needed to bring the network to an acceptable standard (Note this is only the Adopted Back Street, many others are not adopted so the Highway Authority has no liability for their maintenance).

Length of network = 98 638 km
Average width = 3 9 m
Unit cost of replacement = £78 638 / square metre

Options	Description	Calculation	Value
1	Replace the whole network	98638 x 3 9 x £78 638	£30,251,110
2	Assume 50% of the networks is seriously defective and has to be replaced	(98638 x ½) 3 9 x £78 638	£15,125,555
3	Assume 50% of the network is seriously defective but only replace the worst 20% of the defective length	(98638 x ½ x 0 20) x 3 9 x £78 638	£3,033 328

The Footway Network

Only the heavily used footway, which represent only 8% of the footway network is assessed under the BV PI procedure, thus the condition of the majority of the network is not known. In the future it is proposed that the Highway Condition Survey, based on a 1 to 9 visual inspection, as developed by Manchester City is adopted by GMADE for use for all Footways. For 2005/06 trial valuation the following method has been used.

Heavily Used Footways (categories I, 1A and 2)

Survey Type	Date	BV PI value	Survey length	Defective length
Detailed visual	2003/04	51.56%	61.726 km	27.352 km
	2004/05	52.33%	61.037 km	31.94 km
TOTALS			122.763 km	58.446 km

Assume that the block paved and modular/special paved footways in the prestigious areas are still in a satisfactory condition as they have been replaced in the last few years, therefore these defective lengths are a more general nature.

Thus the average width = 2,405 m
the average replacement unit cost = £53.532 per square metre

Assume that a BV PI value of 10% is acceptable
therefore the length needing to be replaced will be 58.446 – 12.276 = **46.17 km**

Thus the cost of removing the Maintenance backlog will be

46170 x 2.405 x £53.532 = **£5,944,132**

Lighter Used Footways (Categories iii, iv and v)

The total length of the networks is

General Bituminous or PC flagged Footways	1403.623 km
Block/modular paved footways	70.765 km
Total network	1474.388 km

It has been assumed that the block/modular paved footways are in an acceptable condition as they have been replaced in the last few years and that an allowance for work undertaken within the last three years can be made to the general network when considering current maintenance needs.

Recent works programmes

Year	Treated length	Overall treated length
2002/03	5.681 km	
2003/04	9.499	
2004/05	16.638	31.818 km

Thus the network length to be considered as 1403.623 – 31.818 = 1371.805 km

Assume that a condition standard similar to the heavily used footways is acceptable, i e only 10% is in a defective condition, therefore the network to be considered can be reduced by 1474 388 x 0 1 = 147 439 km

Thus the footway length needing to be replaced will be 1371 801 – 147439 = **1224.366 km**

The average width is 2 064 m
The average replacement Unit cost is £42 745 per square metre

Thus the cost of removing the Maintenance Backlog will be

1224366 x 2 064 x £42 745 = **£108,020,520**

C.f based on Manchester's system

Identified 31.4% of the network was in need of treatment so using this figure for each category we have

Heavy used footway network

Total length = 122 763 km, 31 4% = 38 55 km
Average width = 2 405 m
Average replacement costs = £53.532 = **£4,963,100**

Lighter used footway network

Total network length = 1474 388, 31.4% = 462.96 km
Average width = 2 064 m
Average replacement costs = £42 745 per square metre

Therefore cost = 462960 x 2 064 x £42 745 = **£40,844,960**

SUMMARY

	Class	Cost of backlog	
CARRIAGEWAYS	Principal	£21,425,767	
	Other classified	£15,892,559	
	Unclassified	£69,033,163	
	Back streets (option 2)	£15,125,555	
	Sub Total		£121,477,034
FOOTWAYS	Heavily Used	**£5,944,132**	
	Lighter Used	**£108,020,520**	
	Sub Total		**£113,964,652**
	OVERALL TOTAL		**£235,441,686**

GROSS REPLACEMENT COSTS – CARRIAGEWAYS

Carriageway Type Description	Standard Description	Asset Value Code	Area (sq m)	Unit Cost per sq m	Value	Total Value
Dual Carriageway	Heavy	A h	350123.22	£ 171.02	£ 59,878,073.08	
Main Roads -						
4 lanes (over 11.7m)	Heavy	B h	286969.17	£ 134.44	£ 38,582,624.01	
4 lanes (over 11.7); traffic managed	Heavy	C h	163994.74	£ 135.66	£ 22,233,960	
Main Roads						
Between 11.69 & 6.75 m	Heavy	D h	603612.78	£ 126.19	£ 76,169,896.71	
	Medium	D m	750577.03	£ 102.24	£ 76,738,995.55	
11.69 – 6.75m; traffic managed	Heavy	E h	56953.58	£ 136.50	£ 7,774,163.67	
	Medium	E m	184410.44	£ 112.56	£ 20,757,239.13	
Secondary Roads						
Between 6.74 & 5.51 m	Heavy	F h	33453.18	£ 136.46	£ 4,598,474.12	
	Medium	F m	448611,51	£ 113.51	£ 50,921,892.50	
	Low	F L	1006137.86	£ 80.22	£ 80,712,379.13	
6.74 – 5.51 m; traffic managed	Heavy	G h		£ 147.46	£ -	
	Medium	G m	188640.82	£ 123.50	£ 23,297,141.27	
	Low	G L	436379.88	£ 90.21	£ 39,365,828.97	
Minor Roads						
Up to 5.5 m wide	Medium	H m	118195.48	£ 116.66	£ 13,788,684.70	
	Low	H L	620113.90	£ 83.37	£ 51,700,563.24	
Up to 5.5 m wide, traffic calmed	Medium	I m	52053.72	£ 84.02	£ 4,373,553.55	
	Low	I L				
Less than 100 m in length	Low	J L	497950.97	£ 82.92	£ 41,290,094.43	
Back Streets etc.	Low	K L	380233.11	£ 78.85	£ 29,981,360.72	
TOTAL CARRIAGEWAY GROSS REPLACEMENT COSTS						£665,941,230.11

Cost of Arresting Deterioration and removing the maintenance backlog (see note for calculations)

Class of Road – defective length	BV PI Acceptable, 5%	Replacement Length, m	Average width m	Average Unit Cost £/sq m	Value
Principal – 22.139 km	6.391 km	15748	9.683	£ 140.51	£ 21,425,767.61
Other classified – 20.654 km	4.191 km	16463	8.172	£ 118.13	£ 15,892,560.15
Unclassified – 159.79 km	37.43 km	122360	6.133	£ 91.99	£ 69,033,153,06
Back Street Option 2 – replace 50%	n/a	49319	3.9	£ 78.64	£ 15,125,555.34
Total costs to bring to an acceptable standard					£121,477,046.14
NET VALUE OF THE CARRIAGEWAY ASSET					£544,464,183.97

GROSS REPLACEMENT COSTS – FOOTWAYS

Surface	Footway Type Location	Standard	Asset Value Code	L F/way	R F/way	Totals	Unit Cost Per sq m	Value	Total Value
Bituminous	Verges both sides	Heavy	F1 h	3083 29	1263 00	4346 29	£ 55 21	£ 239,958 67	
		Lighter	F1 L	19085 25	18240 88	37325 88	£ 44 80	£ 1,672,199 42	
	Verge one side	Heavy	F2 h	14406 44	9529 39	23935 83	£ 51 02	£ 1,221,206 05	
		Lighter	F2 L	16742 75	152530 53	319773 28	£ 40 61	£ 12,985,992 90	
	No verges	Heavy	F3 h	109173 4	90420 65	199594 05	£ 45 26	£ 9033,626 70	
		Lighter	F3 L	979378 65	852585 54	1831954 19	£ 34 84	£ 63,825,632 38	
PC Flags	Verges both sides	Heavy	F4 h	483 16	757 71	1249 87	£ 83 85	£ 104,046 56	
	Lighter	Lighter	F4 L	8395 41	6509 78	14905 19	£ 73 86	£ 1,100,897 33	
	Verge one side	Heavy	F5 h	3369 67	4272 94	7642 81	£ 79 95	£ 611 042 66	
		Lighter	F5 L	68327 15	54882 83	123209 83	£ 69 96	£ 8,619,759 71	
		Heavy	F6 h	36898 04	289309 91	65829 33	£ 74 31	£ 4,891,777 51	
		Lighter	F6 L	257906 36	208309 91	466216 27	£ 64 32	£ 29,987,159 13	
Modular Special Flagged paving	Adjacent c/way	Heavy	F7 h				£ 83 28	£ -	
		Lighter	F7 L				£ 73 40	£ -	
	Prestigious Area	Heavy	F8 h	20520 05	8310 7	8310 7	£ 91 45	£ -	
		Lighter	F8 L				£ 81 57	£ -	
Block Paving	Adjacent c/way	Heavy	F9 h	2870 1	2270 28	5140 36	£ 68 67	£ 352,989 89	
		Lighter	F9 L	4331 88	1885 39	6217 27	£ 59 66	£ 370,322 33	
	Prestigious Area	Heavy	F10 h	1097 65	980 92	2078 77	£ 79 44	£ 165,137 49	
		Lighter	F10 L	46042 58	45815 54	91858 12	£ 70 42		
Bit/PC	No verges	Heavy	F11 h	8222 51	7493 42	15715 933	£ 61 43	£ 955,428 58	
		Lighter	F11 L	73053 24	735116 21	146549 45	£ 51 46	£ 7,544,365 69	
TOTAL FOOTWAY GROSS REPLACEMENT COSTS									£150,160,793 20

Cost of Arresting Deterioration and removing the maintenance backlog (see note for calculations)

Class of Footway	Defective Length	BVPI Acceptable, 5%	Replacement Length, m	Average Width, m	Average Unit cost £/sqm	Value	
Category I, IA & II	56 446	12 276 km	46170	2 405	£ 53 53	£	5 944 131 72
Category III, IV & V			1224366	2 054	£ 42 75	£	£108,020,522 92
Total costs to bring to an acceptable standard							£113,964,654 64
NET VALUE OF THE FOOTWAY ASSET							£36,196,138 56
TOTAL NET VALUE OF THE HIGHWAY ASSET							£580,660,322 53

ANALYSIS OF TRAFFORD COUNCIL'S NETWORK INVENTORY

1 Sample inventories of road width

2 Sample inventories of footway width

3 Assumptions on footway construction

4 Assumptions on carriageway construction

TRAFFORD COUNCIL

SAMPLE INVENTORY

CLASSIFIED 'A'

Dual

- Length of dual carriageway

Single

	Invoice type	A Section Length	B Av Width	A x B Area	4 Lane	TM
Dunham Road	Bh	375	13.8	5,175	Yes	No
White City Way	Bh	240	15 64	8,928	Yes	No
Carrington Spur	Dh	443	14 74	6,534	No	No
Warburton Lane	Fh	1,029	6 65	6,843	No	No
Barton Road	Dh	267	8 88	2,371	No	No
Delahayes Road	Dh	483	10 51	5,076	No	
Talbot Road Dh	Dh	747	11 71	8,747	No	
Stretford Road	Ch	389	12 06	4,691	No	Yes
		3,793		48,365		

DUAL CARRIAGEWAY PRINCIPAL 'A' ROADS

Street Name	Gazetteer No	Sect No	Carriageway		Length
Dunham Road	A000491	050 – 060	Bowgreen Road		107m
Dunham Road	A000491	070 – 080	Bowgreen Road		58m
Dunham Road	A000491	290 – 291	Charcoal Road		241m
Dunham Road	A000491	381 – 430	Charcoal Road		183m
Church Street	A000432	180 – 620	Woodlands Road	The Mount	247m
Manchester Road	A002337	460 – 500	Atlantic Street	George Richards Way	96m
Cross Street	A001662	440 – 700	Dane Road	Crossford Bridge	450m
Chester Road	A003002	000 – 010	Crossford Bridge	South Slips	235m
Chester Road	A003002	030 – 050	South Slips	North Slips	119m
Chester Road	A003002	070 – 090	North Slips	Chapel Lane	533m
Chester Road	A003002	180 – 200	Chapel Lane	Kingways	422m
Chester Road	A003002	230 – 260	Kingsway	Derbyshire Lane	462m
Chester Road	A003002	300 – 320	Derbyshire Lane	Davyhulme Road	166m
Chester Road	A003002	350 – 370	Davyhulme Road	Thomas Street	324m
Chester Road	A003002	530 – 550	Start Dual c/w	Warwick Road	164m
Chester Road	A003002	560 – 600	Warwick Road	White City Road	374m
Chester Road	A003002	610 – 620	White City Circle	White City Circle	91m
Chester Road	A003002	630 – 640	White City Circle	Bridgewater Way	107m
Bridgewater Way	A003416	000 – 250	Chester Road	C/L Railway Bdg	753m
Bridgewater Way	A003416	500 – 750	C/L Railway Bdg	M/C Boundary	458m
				Total	5,636m
Parkway	A001436	000 – 200	Lostock Circle	Barton Dock Road	510m
Parkway	A001436	560 – 700	Barton Dock Road	Parkway Circle	864m
Village Way	A003411	000 – 200	Parkway Circle	Mosley Road	522m
Village Way	A003411	410 – 540	Mosley Road	Fifth Avenue	333m
Village Way	A003411	670 – 810	Fifth Avenue	Village Circle	375m
Wharfside Way	A003412	000 – 310	Village Circle	John Gilbert Way	540m
Wharfside Way	A003412	750 – 850	Sir Matt Busby Way	White City Circle	385m
Trafford Road	A000274	250 – 500	Traff. Wharf Road	Boundary	78m
				Total	3,607m
Old Hall Road	A003150	500 – 700	Broad Road	Dane Road	223m
Old Hall Road	A003150	810 – 930	Dane Road	M60 Roundabout	218m
				Total	441m
Woodlands Road	A000934	000 – 140	Church Street	Barrington Road	191m
Woodlands Road	A000934	280 – 650	Barrington Road	Stockport Road	405m
Stockport Road	A000807	110 – 220	Woodlands Road	End Dual c/w	76m
Shaftsbury Avenue	A000807	830 – 910	Start Dual c/w	Brooklands Circle	149m
Barton Road	A001503	150 – 220	Kingsway	Park Road	213m
				Total	1,034m
Tenax Road	A002894	000 – 500	Parkway Circle	Tenax Circle	701m
Centenary Way	A002893	000 – 150	Tenax Circle	Guinness Circle	188m
Centenary Way	A002893	290 – 640	Guinness Circle	Centenary Bridge	471m
				Total	1,360m
Kingsway	A003291	000 – 500	Barton Road	Chester Road	642m
Edge Lane	A003291	000 – 250	Chester Road	Kings Road	302m
Chester Road	A003002	000	Talbot Road	Stretford Road	171m
Chester Road	A003002	670 – 700	Start Dual c/w	Talbot Road	222m
				Total	1,157m
				Overall Total	13,235

Dual Carriageway

Length – 13.2 km

Area – 243,800 m²

DUAL CARRIAGEWAY PRINCIPAL ROADS

Street Name	Gazetteer No	Sect No	Carriageway		Length	Width c/w Avenue	Area
Dunham Road	A000491	050 – 060	Start Dual c/w	Bowgreen Road	107m	8.84	945
Dunham Road	A000491	070 – 080	Bowgreen Road	End Dual c/w	58m	8.59	498
Dunham Road	A000491	290 – 291	Start Dual c/w	Charcoal Road	241m	7.65	1,637
Dunham Road	A000491	381 – 430	Charcoal Road	End Dual c/w	183m	7.71	1,410
Church Street	A000432	180 – 620	Woodlands Road	The Mount	247m	7.89	1,949
Manchester Road	A002337	460 – 500	Atlantic Street	George Richards Way	96m	8.30	797
Cross Street	A001662	440 – 700	Dane Road	Crossford Bridge	450m	11.92	5,364
Chester Road	A003002	000 – 010	Crossford Bridge	South Slips	235m	13.36	3,139
Chester Road	A003002	030 – 050	South Slips	North Slips	119m	15.89	1,890
Chester Road	A003002	070 – 090	North Slips	Chapel Lane	533m	11.11	5,921
Chester Road	A003002	180 – 200	Chapel Lane	Kingways	422m	12.78	5,393
Chester Road	A003002	230 – 260	Kingsway	Derbyshire Lane	462m	11.84	5,470
Chester Road	A003002	300 – 320	Derbyshire Lane	Davyhulme Road	166m	10.73	1,781
Chester Road	A003002	350 – 370	Davyhulme Road	Thomas Street	324m	11.58	3,752
Chester Road	A003002	530 – 550	Start Dual c/w	Warwick Road	164m	8.82	1,446
Chester Road	A003002	560 – 600	Warwick Road	White City Road	374m	11.61	4,029
Chester Road	A003002	610 – 620	White City Circle	White City Circle	91m	10.68	972
Chester Road	A003002	630 – 640	White City Circle	Bridgewater Way	107m	15.45	1,653
Bridgewater Way	A003416	000 – 250	Chester Road	C/L Railway Bdg	753m	8.17	6,152
Bridgewater Way	A003416	500 – 750	C/L Railway Bdg	M/C Boundary	458m	8.60	3,939
				Total	5,636m		58,137
Parkway	A001436	000 – 200	Lostock Circle	Barton Dock Road	510m	11.03	5,625
Parkway	A001436	560 – 700	Barton Dock Road	Parkway Circle	864m	7.55	6,523
Village Way	A003411	000 – 200	Parkway Circle	Mosley Road	522m	8.25	4,322
Village Way	A003411	410 – 540	Mosley Road	Fifth Avenue	333m	8.44	2,810
Village Way	A003411	670 – 810	Fifth Avenue	Village Circle	375m	7.93	2,974
Wharfside Way	A003412	000 – 310	Village Circle	John Gilbert Way	540m	7.61	4,109
Wharfside Way	A003412	750 – 850	Sir Matt Busby Way	White City Circle	385m	8.88	3,419
Trafford Road	A000274	250 – 500	Traff. Wharf Road	Boundary	78m	14.15	1,104
				Total	3,607m		30,886
Old Hall Road	A003150	500 – 700	Broad Road	Dane Road	223m	9.28	2,069
Old Hall Road	A003150	810 – 930	Dane Road	M60 Roundabout	218m	8.73	1,903
				Total	441m		3,972
Woodlands Road	A000934	000 – 140	Church Street	Barrington Road	191m	9.02	2,069
Woodlands Road	A000934	280 – 650	Barrington Road	Stockport Road	405m	8.24	3,337
Stockport Road	A000807	110 – 220	Woodlands Road	End Dual c/w	76m	9.29	706
Shaftsbury Avenue	A000807	830 – 910	Start Dual c/w	Brooklands Circle	149m	7.65	1,139
Barton Road	A001503	150 – 220	Kingsway	Park Road	213m	7.28	1,550
				Total	1,034m		8,450
Tenax Road	A002894	000 – 500	Parkway Circle	Tenax Circle	701m	7.87	5,516
Centenary Way	A002893	000 – 150	Tenax Circle	Guinness Circle	188m	9.85	1,851
Centenary Way	A002893	290 – 640	Guinness Circle	Centenary Bridge	471m	7.65	3,603
				Total	1,360m		10,970
Kingsway	A003291	000 – 500	Barton Road	Chester Road	642m	8.11	3,746
Edge Lane	A003291	000 – 250	Chester Road	Kings Road	302m	8.45	2,351
Chester Road	A003002	000	Talbot Road	Stretford Road	171m	8.34	1,26
Chester Road	A003002	670 – 700	Start Dual c/w	Talbot Road	222m	7.92	1,758
				Total	1,157m	13,135	9,481
					Area per c/way		121,900
					Total area		243,800m²

Single	Inventory Type	A Length*	B Average Width	A x B M²
Dunham Road	Bh			
White City Way	Bh			
		6 8	14 72	100,096
Stretford Road	Ch			
		4 2	12 06	50,652
Carrington Spur	Dh			
Barton Road	Dh			
Delahayes Road	Dh			
Talbot Road	Dh			
		21.3	11 46	244,098
Warburton Lane	Fh	10 9	6 65	72,485
		43 2 km	10.81 km	467,331 km

Total Cost

Bh	£940,344 + £10,880,435	= £11,820,779
Ch	£631,650 + £5,505,872	= £ 6,137,522
Dh	£2,5539,109 + £26,533,452	= £29,072,561
Fh	£1,000,554 + £7,878,119	= £ 8,879,673
	Sum Total	= £62,910,535
	+ allowance for fees 11 06%	
		£62,094,240

SAMPLE INVENTORY

Classified 'B'

	M A Section Length	M B Av Width	M² A x B Area
Flixton Road	625	9.3	5,812
Townfield Lane	905	5.77	5,221
Dunham Road	648	5.98	3,875
Bowgreen Road	745	7.48	5,572
South Downs Road	1,949	6.54	6,860
Broomfield Lane	476	7.91	3,765
Barrington Road	581	9.89	5,746
Thorley Lane	545	7.80	4,251
Northenden Road	531	8.59	4,561
Matt Busby Way	397	11.02	4,375
Barton Dock Road	928	10.16	9,428
Irlam Road	949	7.06	6,699
Ashburton Road	582	9.54	5,552
Seymour Grove	545	10.91	5,946
Supper Chorlton Road	973	6.01	5,847
Ayres Road	189	7.90	1,493
Dane Road	1,002	9.18	9,148

The sum of Section Lengths = 11,670
The sum of Section Areas = 94,151

$$\frac{\text{The sum of area}}{\text{The sum of Section Lengths}} = \text{Average width}$$

Average width 8.07m

SAMPLE INVENTORY

Classified 'C'

	M A Section Length	M B Av Width	M² A x B Area
Ashfield Road	280	12 24	3,427
Ashley Road	503	6 21	31 23
Barton Road	455	9 92	4,513
Broad Road	808	7 23	5,841
Brooklands Road	738	4 14	3,055
Brook Lane	332	7 38	2,450
Cavendish Road	283	8 43	2 385
City Road	362	12 35	4,470
Davyhulme Road	663	8 76	6,638
Derbyshire Lane	303	11 04	3,345
Flixton Road	676	9 20	6,219
Glebelands Road	955	7 21	4,989
Henrietta Street	96	7 93	761
Hope Road	929	6 98	6,484
John Gilbert Way	625	8.44	5,275
Kings Road	860	11 28	9,700
Moorside Road	543	9 64	5,234
Moss Lane	762	6 20	4,724
Navigation Road	649	7 54	4,893
Oxford Road	284	7 91	2,246
Paddock Lane	676	7 16	4,840
The Quadrant	349	7 94	2,771
Sandy Lane	545	8 74	4,763
School Lane	849	5 36	4,550
Subtotal	14,217		114,41

Classified 'C' (continued)

	A Section Length	B Av Width	A x B Area
Shrewsbury Street	224	7.63	1,709
Sinderland Lane	658	7.83	5,152
Sinderland Road	800	7.85	6,280
Victoria Road	283	6.14	1,737
Warwick Road	317	10.72	3,398
Wellington Road	752	7.76	5,835
Westinghouse Road	704	6.81	4,794
Whitehouse Lane	818	5.45	4,458
Woodend Road	471	8.61	4,055
Sub total	3,027		37,418

Sum of Section Length - 19,244

Sum of Section Area - 151,459

Average width 7.87

SAMPLE INVENTORY

Unclassified

Sum of Area - 2,638,831 m² (from MARCH)

Sum of Length - 364,500 m

Average width 7 23 m

VALUATION
(Cost of replacing the Asset)

- Based on the Sample Inventory of Network
- Based on GM agreed rates
- Based on the GM method of valuation

'A' Roads

Dual Carriageway

Length - 13 2 km

Area - 243,800M²

All considered heavy usage

Replacement Cost [13.2 x (332,673 09 x 2) x 1.1106]
+ [243,800 x 108 70 x 1 1106]

= 9,753,921 + 29,432,077

= £39,185,998

VALUATION
(Cost of replacing the Asset)

- Based on the Sample Inventory of Network
- Based on GM agreed rates
- Based on the GM method of valuation

'B' Roads

Assume all 'B' roads are Dh

Total length B – 53 3 km

Cost [(53 3 x 119,207) ÷ (8 07 x 53 3 x 1,000 x 108 70)] 1.1106
(6,353,733 ÷ 46,755,000) 1 1106

= **£58,982,558**

'C' Roads

Assume all 'C' roads are DM

Total Length 'C' – 48 5 km

Cost [(48 5 x 119,207) ÷ (7 87 x 48 5 x 1,000 x 87 09)] 1.1106
(5,781,539 ÷ 33,241,000)

= **£43,338,431**

Unclassified

[The assumptions below are based on comparisons with all GM Authorities]

1	Assume 20% of Unclassified DM	128.8 km	Average width 7.23 m Based on Sample inventory
2	Assume 10% of Unclassified FM	64.4 km	
3	Assume 10% of Unclassified GM	64.4 km	
4	Assume 10% of Unclassified HM	64.4 km	
5	Assume 50% of Unclassified HL	322.0 km	Average width 6.0m
		644.0	

Total length 644

Use an average width of 7.23 m for all categories except HL

(128 8 x 119,207 + 128.8 x 7 23 x 87 09 x 1,000) x 1.1106 = (15,353 861 + 81,100,298) 1 1106	=	107,121,989
(64 4 x 105,415 + 64.4 x 7.23 x 1,000 x 87 09) x 1.1106 = (6,788,726 + 40,550,000) x 1.1106	=	51,823,556
(64 4 x 145,883 + 64.4 x 7 23 x 1,000 x 87.09) x 1 1106 = (9,394,965 + 40,550,000)	=	49,994,865
(64 4 x 90,699 + 64.4 x 7 23 x 1,000 x 87 09) x 1.1106 = (5,841,015 + 40,550,000) x 1 1106	=	51,521,861
(322 x 90,699 + 322 x 6.0 x 1,000 x 57 06) x 1 1106 (29,205,078 + 110,239,920) x 1 1106	=	154,867,614
Total		£414,329,885

SUMMARY

'A' - Dual		39,185,998
- Single		62,094,240
	Sub total	101,280,238
'B'		58,982,558
'C'		43,338,431
	Sub total	102,320,989
Unclassified		415,329,885
	Total	618,931,112*
Footways		161,11,051

For comparison purposes with other GM Authorities only

* Average cost per km all roads $\frac{618,931,112}{56.4 + 644 + 101.8}$ = £771,542

Footways

* Assume A 2 x 2.5 m footway
  B 2 x 2 5 m footway
  C 2 x 2 5 m footway

  (all black top)

* Unclassified -

  Assume includes all the Category I and II footways

Assume • Category I's	50% Flagged 25% Blocks 25% Bituminous	↕	2.5
• Category II's	60% Bituminous 40% Flags	↕	2 5
• Other	60% Bituminous 40% Flags	↕	2 25

Category 1 – Footways

Category I – 15,549
Category 2 – 11,005

Category I	2 x 2.5 x 7.77 km x 1,000	flags @	54.16	2,104,116
	2 x 2.5 x 3.89 km x 1,000	blocks @	49.06	954,217
	2 x 2.5 x 3.89 km x 1,000	block @	27.91 x 1	542,849
Category II	2 x 2.5 x 4.40 km x 1,000	flags @	54.16	1,201,200
	2 x 2.5 x 6.60 km x 1,000	block @	49.06	1,618,980
				6,421,362

Other Footways

A 13.2 + 43.2 } 56.40

B & C 53.3 + 48.5 = 101.80

U 644.00

802.20

Based on 60% bituminous - (481 km)
40% flagged - (320 km)

Area (m^2) bituminous	2 x 2.25 x 481	=	2164.5
Area (m^2) flagged	2 x 2.25 x 321	=	144.5
Cost bituminous	2164.5 x 27.91	=	60411.195
Cost flagged	1444.5 x 54.16	=	78234.120

Footways	2,104,116
Total Cost	954,217
	542,839
	1,201,200
	1,618,980
	60,411,195
	78,234,120
	145,066,677

Multiplied by 1.1106 for fees - £161,111,051

GROSS REPLACEMENT VALUE

Carriageways	618,931,112
Footways	161,111,051
	789,042,161

DEPRECIATION

(Removal of the Maintenance Backlog)

(Costs of "reconstructing" the roads which fall below the Agreed GM level of Service of 5%)

DEPRECIATED COSTS

Highways –

Assumptions –

1) The road network has been maintained (i.e. the preventative maintenance and the minor treatments have been carried out such that all roads which are not zero residual life are at the "condition" anticipated for their stage in the life cycle of that particular area of the network)

   i e At any point of analysis the average carriageway length is 50% through its life cycle

2) The all-in rate (GM rates) have been adjusted to exclude
   - signs
   - railways
   - road signs
   - white lining
   - traffic calming

   as these will deteriorate

3) The "all in rates" used by GM include for Traffic Management features, lining etc., signing as the rate of depreciation for these items is based on estimated service life

4) Renewal accounting is used to estimate depreciation where infrastructure is maintained at a specified level of service by continued replacement of the components.

   The level of annual expenditure to maintain the level of service in steady state is the "depreciation charge"

5) The GM approach (level of service 5% carriageways with zero residual life)

   Depreciation is the annual cost to maintain at the level of service

6) The current level of deterioration is based on the BVPI result

7) The CVI results have been used as these reflect residual life. The scanner results currently do not give the same degree of accuracy in terms of residual life even if the process is less subjective

DEPRECIATED COST

Principal Roads

Dual Carriageway 'A' Roads

Length M	Area M²	Replacement* Cost/km	Replacement Cost per m
13.2	243,800	£291,133	£120.72

Latest CVI – 2003/4 7.9%

Therefore 2.9% below the level of service (GM level)

Cost = 2.9/100 x 13.2 x 291,133 +
2.9/100 x 243,800 x 120.72

£111,446 + £853,515 = £1,115,310

Single Carriageway 'A' Roads

Length M	Area M²	Average Replacement** Cost/km	Average Replacement Cost per m
43.2	467,331	142,518	120.72

2.9% below level of service

Cost = 2.9/100 x 43.2 x 142,518 +
2.9/100 x 467,331 x 120.72

£61,567 + £1,636,069 = £1,697,636

Sum Total £2,812,946

Notes

1 * excludes signs, railings, road signs, white lines, traffic claming etc.
2 Total replacement costs = cost per km + costs per m²

** average Bh, Dh, Dh, Fh

Classified 'B'

Length km	*Area km²	Replacement Cost/km	Replacement Cost per m²
53.3	430.131	(119,208 x 1.1106) 132,391	108.70 x 1.1106 120.72

Latest CVI 2003/4 9.67
2004/5 5.53

Survey is based on 100% of the network
Therefore we can take 2004/5 value
0.53% below the GM level of service

$$\text{Cost} = \left\{\frac{0.53}{100} \times 53.3 \times 132{,}391\right\} + \left\{\frac{063}{100} \times 430{,}131 \times 120.72\right\}$$

£37,399 + £275,205

SUM TOTAL = £312,603

* based on an average width of 8 07m

Classified 'C'

Length km	*Area km²	Replacement Cost/km	Replacement Cost per m²
48.5	381,695	132,391	96.72

Survey is based on 100% of the network
Therefore we can take 2004/5 value
0.53% below the GM level of service

$$\text{Cost} = \left\{\frac{0.53}{100} \times 48.5 \times 132{,}391\right\} + \left\{\frac{053}{100} \times 381{,}695 \times 96.72\right\}$$

£34,031 + £195,663

SUM TOTAL = £229,694

* based on average width of 7.87m

Unclassified

Total 633 km £415,329,885

Latest BVPI	2003/4	14.45%
	2004/5	17.08%
	2005/6	11.62%

50% of the network carried out in 2005/05
50% of the network carried out in 2005/6

Therefore take average = 14.35%

9.35% below the service level considered as the GM Standard

$\frac{9.35}{100} \times 415,329,885 = £38,833,344$

Backstreets (Alleys)

- **Not considered at this stage**

Footway Network

Category 1, 1a, 2

Total length - 25 8 km

Latest BVPI 2004/5 - 37 4 km
2005/6 - 25 3 km

100% surveyed so use 25 3

Assume a service level of 10% zero residual life (GM agreed type)

Therefore Total GRC = £6,421,362

Thus to bring up to service level = $\frac{15\ 3}{100} \times 7,130,922$

= £1,091,031

Lighter Used Footways

- Bolton have assumed all their footways need to be reconstructed
- Manchester consider 31 46% in need of treatment.

It was agreed by the GM Group that in the absence of any other data this figure would be used by all authorities.

Total GRC

To bring up to service level = $\frac{31\ 4}{100} \times 153 \times 153,980,129$

= £48,349,760

SUMMARY

A		£ 2,812,946
B & C		£ 312,603 £ 229,694
U		£38,833,344
Category I & II		£ 1,091,031
Other footways		£48,349,760
	Total	£91,629,378

ANNUAL EXPENDITURE REQUIREMENT

TO PREVENT DETERIORATION OF THE NETWORK

Notes:

1) In line with Renewals Accountancy Method the annual budget is based on the annual expenditure to maintain the asset at the "level of service determined".

   (i.e. 5% zero residual life)

2) The calculation is based on the Theoretical Cost to maintain the network.

SUMMARY OF THE HIGHWAY DEPRECIATION CHARGES

1) Arresting Deterioration and Removing the Maintenance Backlog to the "Level of Service" defined

= £91,629,378
(Q3 2005)

2) In line with the Renewals Accountancy Method the level of annual expenditure to maintain the asset at the "level of service defined"

=

Annual expenditure for steady state
(based on the whole life cycle model)

- 5% zero residual life
- September 2005 prices

Annual budget requirements at Q4 2001
For steady state 100% maintained –

(Level of service £ 4,482,550)
÷ 499,905

= £ 4,982,455

Level of service 5% zero residual life
Therefore only Maintaining 95% of the network
Therefore annual expenditure for steady state = 95 x £4,982,455 / 100

= £ 4,733,332

£4,733,332 Q 4 2001

At Q3 2005

@ 1¼% per Q

Say = 18 75% increase

£4,733,332 x 1.1875

Allow 10.86% fees

= £6,231,253

ALTERNATIVE DEPRECIATION CALCULATIONS

(REMOVAL OF THE MAINTENANCE BACKLOG

Based on

- Trafford Council model major treatment costs (partial reconstruction)
- A service level that assumes a percentage of roads requiring major intervention (i.e. not all backlog removed).

Note:

For comparison only and practical application not for accountancy purposes.

BASED ON THE "LIFE CYCLE" TREATMENT COSTS

COSTS TO REMOVE MAINTENANCE BACKLOG

(a) Assuming 8% zero residual life

Urban Unclassified

Currently 14 35% zero residual life

Carriageway surface

Major treatment = £21 37 per m² Q4 01
Average width of carriageway = $\frac{(7\ 23 + 6\ 00)}{2}$ = 6 62 m

= 644,000 x 6 62 x 6 35 x (25 65 x 1 1)

= £7,638,315

Kerbing treatment @ £7.85 per m

Assume 8% at zero residual life

= 644,000 x 2 x $\frac{14\ 35}{100}$ – 8 00) x 7 85

= £642,035

Footway
- major treatment - £18.55 per m²
- width
- % requiring major treatment (31 4% - 80)

= 664,050 x 2 x 2 5 x $\frac{32\ 4}{100}$ x 18 55

= £12,579,348

Subtotal £20,859,698

At Q3 rates factor X 1.1875

£24,770,890

Allow 10% for fees x 1 1

£27,249,980

Classified Roads A, B, C

All either below or approximately 8% zero residual life level

BASED ON THE "LIFE CYCLE" TREATMENT COSTS

COSTS TO REMOVE MAINTENANCE BACKLOG

(b) Assuming 0% zero residual life

Urban Unclassified

Currently 14.35% zero residual life

Carriageway surface

$$= 644.000 \times 662 \times \frac{14.35}{100} \times (25.65 \times 1.1) = £17,261,391$$

Kerbing

$$= 644,000 \times 2 \times \frac{14.35}{100} \times 7.75 = £\ 1,450,899$$

Footway

= 644,000 x 2 x 2.25 x 31.4 x 18.55 = £16,879,980

Sub total = £35,592,270

@ Q3 05 rates factor 1,1875 = £42,265,820

Allow 10% for fees = £46,492,402

Principal Road 'A'

Currently 7.9% zero residual life

Carriageway surface = Q4,01
Average width

$= 56,000 \times 108 \times \frac{9\ 9}{100} \times 36\ 41$ = £1,739,640

Kerbing

$= 644,000 \times 2 \times \frac{14\ 35}{100} \times 7\ 75$ = £1,450,899

Footway

$= 56,000 \times 2 \times \frac{7\ 9}{100} \times 18\ 55$ = £ 369,293

Sub total = £2,178,390

@ Q3 05 rates x 1.1875 = £2,286,838

Allow 10% fees = £2,845,321

Classified B & C's

Currently 5.5 zero residual life

Average width B - 8.07
C - 7.87

Use 8.0m as an overall average

Carriageway surface

$$= 110{,}000 \times 8.0 \times \frac{5.5}{100} \times 36.41 = £1{,}762{,}244$$

Kerbing

$$= 110{,}000 \times 2 \times \frac{5.5}{100} \times 7.85 = £94{,}985$$

Footway

$$= 110{,}000 \times 2 \times 2.25 \times \frac{5.5}{100} \times 18.55 = £303{,}023$$

Sub total	=	£2,362,252
@ Q3 05 x 1.1875	=	£2,805,174
Allow 10% fees	=	£3,085,692

DEPRECIATED

REPLACEMENT

COST

Depreciated Replacement Cost	=	Gross Replacement Cost	-	Cost of Maint. Backlog
	=	£780,042.00	-	£91,629.00
	=	£688,413.00		

APPENDIX E

LEVELS OF SERVICE DOCUMENTS

Carriageways and footways

Cycleways

Drainage

Public Rights of Way

Passenger Transport Infrastructure

Safety cameras

Street lighting Signs and Bollards

Structures

Traffic Control Information Systems

Trees verges & hedges

Vehicle restraints (safety fences)

Information to be provided in upgraded document

1. Level of Service – Structures

Service	Statutory	Level of Service currently funded	Level of Service to Maintain Current Condition of Stock	Acceptable Minimum Level of Service	Level of Service to Enhance Current Condition of Stock
Inspecting 367 Highway Structures	Section 41/58 – Highway Act 1980 - To maintain and repair the highway to an adequate standard - To ensure that where the highway is not maintained and repaired to an adequate standard that sufficient warning is given to the users of the highway to safeguard their passage.	Biennial general (visual) inspection of each structure in stock (79 number of bridge inspected/ year) - Principal (detailed) inspection once every six years of each of the Highway structures in the stock - Special inspections of particular problems as and when required (scour, post tensioned concrete structures, etc)	Biennial general inspection of each structure in stock - Principal inspection once every six years of each of the structures in the stock - Special inspections of particular problems as and when required (scour, post tensioned concrete structures, etc)	As currently plus full maintenance programme as per current proposed practice.	As proposed for maintaining current condition of stock - Plus repairs and reactive work to be done more quickly - Improvements to stock (extra lanes, new bridges to be undertaken)

Service	Statutory	Level of Service currently funded	Level of Service to Maintain Current Condition of Stock	Acceptable Minimum Level of Service	Level of Service to Enhance Current Condition of Stock
Assessing structures				As current	As currently except for an increase in research to seek hidden strength of structures and underwater surveys
Maintaining structures		**Reactive** - Emergencies and essential repairs	**Regular** - Routine **Programmed** - Prevention/ component renewal/ painting **Reactive** - Emergencies and essential repairs	As current	**Regular** - Routine **Programmed** - Prevention/ component renewal/ upgrading/ improvements and component replacement **Reactive** Emergencies repairs

Service	Statutory	Level of Service currently funded	Level of Service to Maintain Current Condition of Stock	Acceptable Minimum Level of Service	Level of Service to Enhance Current Condition of Stock
Managing substandard structures		**Weight Restrictions** - Imposition of weight restrictions **Restricted Clearances** - Erection of warning signs **Interim Measures** - Installation of protective measures to safeguard public (bollards to prevent access to weak areas of deck, narrowing carriageways, etc) **Monitoring** Limited Monitoring of weak and deteriorated structures	As current	As currently + programme as per current practice	

Service	Statutory	Level of Service currently funded	Level of Service to Maintain Current Condition of Stock	Acceptable Minimum Level of Service	Level of Service to Enhance Current Condition of Stock
Upgrading parapets/ piers		Low key programme - Occasionally on bridge per year	As current		
Improving road/ rail interface safety		Programme to assess and implement as quickly as practicable	As current		

2. Availability/ Accessibility

Service	Statutory	Level of Service currently funded	Level of Service to Maintain Current Condition of Stock	Acceptable Minimum Level of Service	Level of Service to Enhance Current Condition of Stock
Developing availability indicator	Section 122 – Road, Traffic Regulation Act 1984 - To secure and maintain reasonable access to premises	Development of indicator in progress; trial on the use of the indicator has been undertaken and results of this have been forwarded to Atkins who are developing this indicator on behalf of the CSSBG et al			

Service	Statutory	Level of Service currently funded	Level of Service to Maintain Current Condition of Stock	Acceptable Minimum Level of Service	Level of Service to Enhance Current Condition of Stock
Reconstructing/ strengthening structures		Determined from bridge inspections	As current	As current	The County Council will need to define the level of service for different classes of route before those for bridges can be established From definition of the levels of service increased programme of reconstruction/ strengthening would result.

Service	Statutory	Level of Service currently funded	Level of Service to Maintain Current Condition of Stock	Acceptable Minimum Level of Service	Level of Service to Enhance Current Condition of Stock
Improving geometry of road over bridges to provide increase carriageway widths and enhanced facilities for pedestrians		No specific programme currently undertaken. Any geometric improvements only undertaken as part of reconstruction schemes	As current	Cessation of any geometric improvements within programme of bridge reconstructions.	From definition of the levels of service a specific programme of geometric improvements would result.

3. Condition of the Asset

Service	Statutory	Level of Service currently funded	Level of Service to Maintain Current Condition of Stock	Acceptable Minimum Level of Service	Level of Service to Enhance Current Condition of Stock
Measuring the condition of structures		General inspections	As current	As current	
Refurbishing major structures		Programme from inspections scheme/ year	Programme from inspections	Programme – increase to at least three schemes a year to tackle the increasing deterioration of the major structures	Programme – increase in number of schemes over that for maintaining current condition, number determined by the level of available funding
Replacing minor structures		Programme from inspections	Programme from inspections	Programme – replacement of small filler joist and trough deck bridges and small masonry arches – 6 schemes/ year	*Programme – replacement of small bridges would increase up to 12 schemes/ year based on the number of bridges in the stock and assumed structural design life of 120 years*

4. Environmental Impact of the Asset

Service	Statutory	Level of Service currently funded	Level of Service to Maintain Current Condition of Stock	Acceptable Minimum Level of Service	Level of Service to Enhance Current Condition of Stock
Protecting the natural environment	Wildlife and Countryside Act 1981, subsequent schedules and biodiversity plans		As current	As current	As current
Enhancing the As Built Environment		Consultation Borough Planners is held on the design of all new structures, irrespective of whether planning approvals are required, and on finishes enhance the As Built Environment Consultations are also on going with interested parties with the application of art to existing structures	As current	As current	As current

5. Customer Service

Service	Statutory	Level of Service currently funded	Level of Service to Maintain Current Condition of Stock	Acceptable Minimum Level of Service	Level of Service to Enhance Current Condition of Stock
Consulting stakeholders		All effected councils and other parties consulted during the development of schemes			
Providing publicity		Leaflets explaining the works and traffic management arrangements are produced for all major schemes. Press releases issued for all schemes where significant impact on public occurs			
Dealing with enquiries		On going – as and when required	As current	As current	As current
Dealing with enquiries under the Freedom of Information Act	Freedom of Information Act 2000	All enquiries answered within the statutory twenty days	As current	As current	

6. Financial Performance – Value for Money

Service	Statutory	Level of Service currently funded	Level of Service to Maintain Current Condition of Stock	Acceptable Minimum Level of Service	Level of Service to Enhance Current Condition of Stock
Delivering value for money				Proposed to introduction whole life costing to evaluate the optimum ways of maintaining asset groups. Present lifecycle plans based on experience and knowledge of individuals involved in maintaining structures	

APPENDIX F

MAINTENANCE PLANS

MAINTENANCE PLAN FOR CARRIAGEWAYS AND FOOTWAYS

MAINTENANCE PLAN FOR CARRIAGEWAYS AND FOOTWAYS

1 Goals, Objectives and Policies

Corporate Priorities

These priorities have been developed into a set of corporate objectives to steer service planning in the medium term:

1 to increase the safety of individuals and communities

2. to improve care, support and health outcomes for vulnerable adults, older people and informal carers

3 to improve access, timeliness and standards

4 to improve awareness of Trafford as a place to live, work and visit

5. to support local businesses and regeneration

6 to improve access to skills development for the world of work

7 to improve outcomes for all children and young people

8. to improve the cleanliness and sustainability of the local environment

9 to support diversity, promote equal access to facilities

10 to improve access to sports, arts and leisure facilities

11 to improve our use of available resources (time, staff, money, premises)

The principles which underpin and define the objectives of highway maintenance are

- Network Safety

  i) Complying with statutory obligations
  ii) Meeting users needs

- Network Serviceability

  i) Ensuring availability
  ii) Achieving integrity

iii) Maintaining reliability

iv) Enhancing quality

- Network Sustainability

i) Minimising cost over time

ii) Maximising value to the community

iii) Maximising environmental contribution

Highway Objective/Action Plan

- Achieve a top quartile position c.f. Other Metropolitan Borough Councils.
- All carriageways to be a maximum of 8% requiring major intervention.
- Review and update the Highways Maintenance Policy, taking into account the new code of practice for Highway Maintenance Management.
- Determine customer required service level.
- Final digitisation of the Network. Analysis of existing survey data. Production of survey condition data on Map Info.
- Production of condition data such that roads requiring preventative treatments can be identified. It is proposed to divide the highway network into three groups based on the condition data as outlined below.

Condition as follows:-

Red roads – these are sections of road which are in the worst condition, their level of deterioration, especially their structural deterioration, exceeds a nationally recognised 'threshold level' beyond which sections of road are deemed 'not in good condition'. These sections of road are measured and quantified for the purpose of Best Value Performance Indicators. Treatment of these roads is aimed at restoring them to 'good condition' (Green – please refer below).

Amber roads – these are sections of road which although not in as bad condition as the red sections are close to the red 'threshold level'. If left untreated, these sections of road will deteriorate into the red category. As the structural integrity of these roads is relatively sound their average cost of treatment is substantially less than for that required to treat red sections

of road. Treatment of these roads is aimed at arresting deterioration It is considered to be a cost effective investment to treat roads whilst they are in the amber category as the treatment required to restore them is less than if it is allowed to degenerate into a red band condition.

Green Roads – these roads are essentially in good condition.

2. Inventory

Carriageways and Footways Assets

Asset Sub Group	Network Length km	How data obtained	Length verified	Confidence in reliability of Data	Where Data Stored
Principal Carriageways		*UKPMS	2006	**High	UKPMS
B & C Carriageways		*UKPMS	2006	**High	UKPMS
Unclassified Carriageways		*UKPMS	2006	**High	UKPMS
Category 1, 1(a) & 2 Footways		*UKPMS	2006	**High	UKPMS
Category 3 & 4 Footways		Estimate only	2003	Low	

Category 1(a) = Prestige Area (none defined in Trafford)
Category 1 = Primary Walking Group
Category 2 = Secondary Walking Route
Category 3 = Link Footway
Category 4 = Local Access Footway

* Data held in digitised format on United Kingdom Pavement Management system.
** Data confidence high due to: data collected by trained and accredited personnel employed by DCL Ltd using DfT accredited software. DCL have a quality control system.

3 Asset Valuation

A value for Gross Replacement Cost (GRC) and Depreciated Replacement Cost (DRC) for the carriageway and footway asset has been determined as shown in the table below

The Gross Replacement Cost is the cost of replacing the asset with a substantially identical new asset to an appropriate modern standard. The Depreciated Replacement Cost is the cost of replacing an asset after deducting an allowance for the effect of wear and ageing i.e. after making an allowance for the consumed service lift of the asset (the second hand price) The DRC for carriageways and footways has been assessed taking account of this asset. The DRC is represented here as Gross Replacement Cost – (condition based maintenance).

Carriageways and Footways Assets Valuation 06/07

	A	B	C	D	E	F
Asset Sub Group	**Network Length km**	**Approximate Reconstruction Cost per km* £000**	**Gross Replacement Cost (reconstruction Cost) ****	**Condition Based Maintenance Required to return to as new**		**DRC (Depreciated Replacement Cost)**
Principal Carriageways	56	574	101,280,238		2.9	2,812,946
B & C Carriageways	102	454	102,320,989		0 53	542,297
Unclassified Carriageways	648	309	415,329,885		9 35	38833344
Category 1, 1(a) & 2 Footways	26	60	161,111,051		25 3	48,349,760
Category 3 & 4 Footways	1,578	60 approx				
Total Costs						

* Trafford's maintenance model rates (not valuation rates)
** As per valuation method
*** Based on Trafford maintenance model Col B x length of asset requiring major intervention
Length of asset requiring maintenance is based on CVI value above the agreed GM level of service i.e. 5%.

Carriageways and Footways Assets Valuation: condition based maintenance 06/07

1 Higher Cost Treatments: 'Red Band' – average 'red band' cost.
Includes schemes for overlay, re-surfacing, and reconstruction

Asset Sub Group	Network Length km	Approximate Reconstruction Cost per km	km above CVI/DVI threshold (red band) requiring reconstruction requiring reconstruction to return to as new (see Table 2 for parameters)	Data derived from	Confidence Level in data	Sub Total Maintenance Costs
Principal Carriageways	56			CVI Survey 06/07	*Medium	
B & C Carriageways	102			CVI Survey 06/07	Medium	
*Unclassified Carriageways	640			CVI Survey 05/06-06/07	Medium	
**Category 1, 1(a) & 2 Footways				DVI Surveys 05/06-06/07	Low	
***Category 3 & 4 Footways				Estimate	Low	
Sub Total Costs (higher cost treatments)						

Medium confidence in data due to nature of CVI survey re: year on year repeatability and fact that it is a driven survey

2 Mid Range Treatments, 'Amber Band' preventative maintenance .e g surface dressing

Asset Sub Group	Length km	Approximate Surface Dressing & Lower Cost Treatments per km	km above CVI/DVI mid (amber) band requiring Mid Range cost treatment to return to as new	Data from	Confidence Level in data	Sub Total Maintenance Costs
Principal Carriageways				CVI Survey 06/07		
B & C Carriageways				CVI Survey 06/07		
*Unclassified Carriageways				CVI Survey 05/06-06/07		
**Category 1, 1(a) & 2 Footways				DVI Surveys 05/06-06/07		
***Category 3 & 4 Footways				CVI Survey 03/04		
Sub Total Costs (higher cost treatments)						

Total Condition Based Maintenance Costs (sum of sub total costs)
[excludes Reactive Maintenance Costs]

Asset Sub Group	Gross Total
Principal Carriageways	
B & C Carriageways	
*Unclassified Carriageways	
**Category 1, 1(a) & 2 Footways	
***Category 3 & 4 Footways	
Total Maintenance Cost *sum of sub total costs)	

Asset Group	Threshold Level (red band) Overall CVI/DVI, CI Score	Threshold Level (red band) Overall SCANNER CI Score	Mid Bands Overall CVI CI Score	Lower Bands Overall DVI/DVI CI Score
Principal Carriageways				
B & C Carriageways				
Unclassified Carriageways				
Category 1, 1(a) & 2 Footways				
Category 3 & 4 Footways				

4. Condition

The Carriageway and Footway networks are subject to routine, annual machine based and 'visual' condition surveys as well as a disciplined regime of safety inspections

Routine, annual machine based and visual surveys (annual data collection programme)

The data is collected using Department For Transport (DfT) accredited survey methods which employ DfT accredited surveyors and data collection software The surveys are procured from an external provider The condition data is stored on our United Kingdom Pavement Management system (UKPMS) computer which also conforms to DfT standards This standard methodology is applied nationally and thereby provides Trafford with the opportunity to compare condition data results (levels of service) with other authorities

The UKPMS holds a record of each section of carriageway in the Borough, as well as each section of Category 1, 1(a) and 2 Footways, and accordingly holds condition data relating to each of these sections This condition data is used to calculate Best Value Performance Information required by the DfT and management information used by the Council to assess performance

The performance information requires verification by engineering inspection by the Maintenance Engineers, to determine the allocation of funding.

Trafford Council is committed to targeting maintenance where it is most needed based on life cycle whole life costing in order to maximise resources The results of the surveys provide valuable information about surface and structural condition which highlight the areas of greatest need. Results from these routine, annual condition surveys enable.

1 Sections of the carriageway/footway that require further or detailed investigations to be identified with a view to implementing remedial measures.

2 Engineers to use the information to support their local maintenance planning process and engineering knowledge.

3 Data to be used in higher level decision making such as target and budget setting

Our annual data collection strategy employs the following:

- CVI Survey - This is a 'course visual survey', subjective in its very nature. It is a driven survey (approximately 20 km/hour), whereby observations of certain categories of defect are recorded in a lap top computer. The computer records position, extent and severity of defect against the network section in question.

Our current CVI survey programme includes 50% survey of the unclassified carriageways. (Note that the 100% of the unclassified network is surveyed every two years, since a separate 50% of the network is surveyed in alternate years).

- DVI Survey - This is a 'detailed visual survey'. Also subjective in its very nature. It is a walked survey, whereby observations of certain categories of defect are recorded in a palm top computer by survey personnel. The computer records position, extent and severity of defect against the network section in question. A DVI survey is applied to 100% of our category 1, 1(a) and 2 footways annually.

- SCANNER survey (previously referred to as TRACS type survey). This is a relatively new, machine based survey, introduced in 2004/05 for principal carriageways only and extended by the DfT in 2005/06 to include coverage to B and C carriageways. It is a traffic speed survey which measures a number of characteristics of the carriageway such as rutting, longitudinal and transverse profile as well as 'intensity of cracking'. This survey method is designed to replace CVI surveys. 100% of the A, B and C network is covered by SCANNER.

- SCRIM survey. Have not been undertaken in Trafford, however, this is now under review. This is a machine based, annual survey, which measures the skidding resistance' of our principal carriageways only. The survey is carried out at traffic speed and is applied to 100% of our principal carriageways. The data is used to investigate sites where skidding resistance is below a defined level. A risk assessment of predetermined sites is planned to be undertaken. This is in accordance with the 2005 Code of Practice for Highway Maintenance Management.

The table below provides a summary of the annual data collection programme.

Annual data Collection Programme – routine, annual machine based and visual surveys

Asset Sub Group	Survey Method(S)	Coverage	Frequency	Data Stored	Data used for	Confidence Level
Principal Carriageways	SCRIM	Zero (To be reviewed)	Annually	UKPMS	BVPIs, identifying sites for maintenance funding needs	High
Principal Carriageways	SCANNER	100%	Annually	UKPMS	BVPIs, identifying sites for maintenance funding needs	Medium
B & C Carriageways	SCANNER	100%	Annually	UKPMS	BVPIs, identifying sites for maintenance funding needs	Medium
Unclassified Carriageways	CVI	50%	Annually – 100% coverage every two years	UKPMS	BVPIs, identifying sites for maintenance funding needs	Medium
All road classes and footways	NRMCS		Annually	UKPMS	Trend data	High
Category 1, 1(a) & 2 Footways	DVI	100%	Annually	UKPMS	BVPIs, identifying sites for maintenance funding needs	Medium
Category 3 & 4 Footways	CVI	50%	Annually – 100% coverage every two years	UKPMS	Identifying sites for maintenance funding needs	* low

* As the category 3 & 4 footway survey is part of the unclassified CVI survey and is not a detailed walked survey (recommended for footways) confidence in the data is low

Condition data is used not as a replacement for sound engineering knowledge but as an enhancement to it. It is widely acknowledged that visual surveys are subjective in nature and therefore have a relatively wide tolerance. Machine based surveys are more repeatable and remove subjectivity from measurement. However, there are currently a number of issues with these techniques that mean that the output from these surveys can not be fully relied upon and must be subjected to appropriate scrutiny and reality checking by experienced staff. It is expected that the quality of data provided by machine based surveys will improve over time.

Our prediction of asset deterioration as well as our associated forward planning, currently largely relies upon visual condition data with its inherent deficiencies. Research is underway to develop deterioration and forward planning 'models' based on machine based surveys such as SCANNER once we are happy with the quality of the data that the survey provides.

Currently our knowledge of the Condition of Category 3 & 4 footways is minimal. Prioritisation of maintenance is largely identified via safety inspection results, engineering knowledge, feed back from the public, and third party insurance claims against the council for damage to persons and vehicles arising from unresolved defects in the footways

Safety and Service Inspection Regime

Safety inspections are designed to identify all defects likely to create danger or serious inconvenience to users of the network or the wider community. An inspection regime incorporates inspection frequencies, items to be recorded and nature of response supported by an assessment procedure based on risk probability.

Service inspections are undertaken at a frequency to reflect the relative importance of the asset as well as taking into account the context of its use. For instance, specific local criteria apply in certain circumstances where because of the very nature and importance of the asset an increase in the inspection frequency is required (an access route by a school or hospital for example).

Defects are subdivided into two categories:

Category 1 – those that require prompt attention within 24 hours because they represent an immediate or imminent hazard.

Category 2 – all other defects.

The response times for repair of defects are influenced by risk assessment and are prioritised as follows:

Priority	Defect category	Time taken
Priority 1	Category 1	within 2 hours (make safe or repair)
Priority 2	Category 1	within 24 hours (make safe or repair)
Priority 3	Category 2	within 7 days (make safe or repair)
Priority 4	Category 2	within 28 days (repair)
Priority 5	Category 2	Repair during the next available programme, schedule more detailed inspection or review condition at next inspection

The frequency at which safety inspections are carried out is shown in the table below

Frequencies of Safety Inspections

Feature/Asset Group	Maintenance Network Hierarchy	Frequency
Carriageways	Strategic Route	1 month
	Main Distributor	1 month
	Secondary Distributor	3 months
	Link Road	6 months
	Local Road	12 months
	Minor Access Road	12 months
Footways	Primary Walking Route	1 month
	Link Footway	12 months
	Local Access Footway	12 months

Current/Desired Condition

Current Condition

The Best Value Performance Indicators (BVPIs) are recognised by the DfT as indicators of the condition of the network. These reported annually following the routine annual surveys. The data reflects the results of the surveys carried out in the previous financial year. As the condition surveys are typically carried out relatively early on in the financial year the results of the surveys show service improvements resulting from maintenance work carried out the year before. Therefore, by the time the audited performance results are published they are reflecting maintenance carried out two financial years previously.

The survey results for 2007/08 and targets to 2010/11 are shown in the table below:

Asset Group	Survey Type	2006/ 2007	2006/ 2007	2007/ 2008	2008/ 2009	2009/ 2010	2010/ 2011
		Outturn	Target Set	outturn	Target	Target	Target
Principal Carriageways	BV223 SCANNER	-	-	9	7	5	3
B & C Carriageways	BV224a SCANNER	-	-	8	6	4	2
Unclassified Carriageways	Bv224B CVI	-	-	9	8.7	8.4	8.1
Category 1, 1(a) & 2 Footways	BV187 DVI 2 year rolling programme	-	-	8	8	8	8

Trafford also collects condition data as part of the DfT National Roads Maintenance Condition Survey. This is an annual, visual survey on a statistic al sample of 100 metre sections across all carriageway classes, similar to but not quite as detailed as the CVI survey.

The Council is currently looking at strategies to reduce the current backlog of maintenance.

The Executive Member has stated a desire that the removal of the maintenance backlog is carried out over a short period (possibly as short as 3 years) so that there is a tangible improvement to residents

Finance is currently being sought

- The backlog of maintenance includes not only highways which require major intervention but highways where the preventative maintenance has not been carried out at the correct interval and the preventative backlog also needs to be addressed

  As previously stated it is proposed to divide the carriageways into three groups, red, amber and green, in order to address both the major intervention requirements and the preventative requirements

  The ultimate aim is to have a life cycle plan for each section of carriageway, although realistically this is some years away

4 Desired Condition

The desired condition of the highway is currently under discussion. Information has been provided to the Executive Member for Technical Services, on condition and the anticipated funding levels to achieve the condition initially, and to maintain at that level (steady state costs)

The judgment on the condition required will be based on:

- What the public perception is
- Current condition and deterioration information
- Comparison with other Metropolitan Councils
- CPA result
- Available budget
- Corporate priorities/aspirations

Achievement of condition targets are reviewed annually once results from the condition surveys are available Changes in current condition, together with any changes in anticipated budget, may be translated into revised desired condition targets.

The funding required to meet desired targets is calculated from required improvement cost per km. The improvement required to realise the desired target is determined from the difference between current condition result and desired condition target expressed as km of network

Note that any funding for improvement must be over and above the funding level required for steady state i.e the costs to maintain the assets at the current level of repair

Calculation of deterioration

Rate of deterioration

This is currently based on a theoretical model (see life cycle plan). As outlined the proposal is to develop three categories of road, red, amber and green. At "steady state" the length of road in each category should stay the same. By analysing the year on year changes in km within the respective categories it should be possible to identify the rate of deterioration and to determine the correct percentage of spend, preventative, intermediate treatments and preventative treatments.

The above method can only be a guide due to the limitation of the data. CVI is subjective and scanner data by very definition identifies roads "where further investigation needs to be carried out. Further work is required to get a better understanding of the algorithms used to produce the condition date provided by the surveys so that they can be used to more closely identify the current condition, and hence the treatments required.

Rate of deterioration is currently measured solely on BVPI indicators of roads requiring major intervention. Due to problems with the scanner surveys, software problems on the ARUN machine, it has not been possible to use this information. However, it is recognised that the development of models to increase accuracy and reliability is required.

What is important is to get the balance correct between the different forms of treatment and to ensure treatment at the optimum time.

5. Demand

Carriageways

- Population change
- Change of traffic flows and composition – particularly changes in volume of Goods Vehicles (GVs)
- Extremes of weather
- Public need and perception of service
- Need to improve condition to help meet accident reduction targets

Footways

- Changes in use
- Extremes of weather
- Public need and perception of service
- Accessibility issues

Accident Reduction

SCRIM surveys have not been undertaken in the past in Trafford as there has been no annual budget to fund surface treatment maintenance for sites which surveys would identify where skidding resistance is inadequate

Weather Conditions

Extremes of weather accelerates network deterioration but are difficult to predict. Abnormally wet weather, storm intensity are particularly influential in Trafford to the topography

Public Need and Perception

The following identify the community view that the condition of the highways is seen as important·

- Community plan
- Corporate objectives
- Mori Poll 2006/7

Currently work is being carried out by DfT and at GM level to determine how to quantify in condition data terms the level of service required by the public expressed in qualitative terms

6 Performance Gaps

Performance gaps have been identified as the difference between the current and desired condition (level of service).

The performance gap can be calculated based on:

- Achieving the top quartile
- Ensuring a maximum 8% of the asset is in need of major intervention

This is difficult due to the change in survey method CVI to scanner. The "gap" is based on the last CVI results.

The performance gap between customer expectations and actual are awaiting the works outlined earlier.

7 Option Identification

There are a number of factors to be taken into account when determining options for improving/maintaining the condition of the network:

- Budget Allocation
- Statutory obligations
- Current condition of the network and predicted levels of deterioration
- Current/Desired Levels of Service (expressed as targets)
- Public perception of priorities

Identification of options regarding 'basic reactive maintenance' (the filling of pot holes and the like in response to defects identified via safety inspections or reported by the public), is largely influence by:

- Statutory obligations to maintain a safe highway
- Recorded numbers of safety related defects
- Numbers of insurance claims
- Service targets
- Public perception of priorities

Similarly, identification of options for structural maintenance is influence by:

- Supply of DfT, capital based funding (which is determined annually by the DfT)
- Statutory obligations to maintain a safe highway
- Current condition of the network and predicted levels of deterioration
- Service targets set for improving the condition of the asset
- Public perception of priorities
- A need to maximise resources

Supply of funding will have the largest influence on the option (level of service) decisions. The current gaps in performance and subsequent funding need to achieve desired targets is shown in the tables below,

Current Anticipated Budgets 2007/08-2010/11 (planned and preventative)

Funding Assumptions £M	2008/09	2009/10	2010/11
A Roads	1250	1250	1250
B+C roads	1850	1850	1850
Unclassified roads	3500	3500	3500
Total funding	6600	6600	6600

Additional funding (£M) required, to achieve top quartile

Road class	1 year of additional funding (2008/09) £M	2 years of additional funding (2008/09 and 2009/10) £M	3 years of additional funding 2008/09, 2009/10 and 2010/11) £M
A Roads	New indicators (not known)		
B+C roads	New indicators (not known)		
Unclassified roads	New indicators (not known)		
Total additional funding required	N/A	N/A	N/A

8 Budget Optimisation

Trafford Council Maintenance budgets are derived from three sources:

- Revenue funding provided by Trafford Council (devolved from the Revenue Support Grant provided by the government). It is largely based on the previous years allocation plus an allowance for inflation.
- Annual Capital Maintenance Allocation (supported borrowing) provided by the DfT
- Capital – from the Council's own resources

The distribution of the budget is based on:

- Current condition (service level) of each class of carriageway or footway
- Predicted levels of deterioration
- Desired condition (service level) of each class or carriageway or footway
- Improvement km required to 'bridge' the performance gaps between current and desired Service Levels (refer to 'Performance Gaps)
- Scheme types and associated costs
- Public perception of priorities
- Statutory obligations to maintain a safe highway
- Option most appropriate to deliver maximum use of resources and account of all the above.

Reactive maintenance is expensive compared to planned maintenance. However, it is inevitable that some reactive maintenance will be required.

It is proposed to work on identifying the optimum level of carriageways requiring major intervention based on:

- The "steady state" costs to maintain at that level of service (major intervention and preventative)
- The reactive maintenance costs at that level of service. (In theory if there were zero roads requiring major intervention and all the preventative treatments were on target then there should be zero reactive maintenance).
- The insurance payments at that level of service

9 Risks

Trafford Council has a duty under Section 41 of the Highways act 1980 as the local highway authority to ensure that all maintainable roads and footways are maintained in a safe condition having regard to the amount and nature of traffic using them

Risk management comprises both strategic and operational risk

- Physical. defects related to network safety or health and safety issues relating to operatives and staff
- Budgetary identifying the correct ratio between reactive (basic) and planned maintenance and between preventative and major interventions
- Financial budgetary control
- Legal· related to possible breaches of legislation (duty of care)
- Contractual associated with the failure of contractors to deliver services to the agreed cost of specification
- Technology relating to reliance on equipment such as gritters
- Environmental· relating to noise or air pollution

The risks associated with maintaining the condition of the carriageway and footway network in Trafford have been reviewed and a total impact score and likelihood identified. A traffic light system of red, amber and green shows whether the risk requires an action plan to mitigate risk, whether the risk can be tolerated but kept under review or the risk can be tolerated.

Risk - event	Total impact score	Likelihood	Status
Increase in physical defects (deterioration) on A, B & C roads due to lack of investment, resulting in increase in accidents and insurance claims.			
Increase in physical defects (deterioration) on unclassified roads due to lack of investment, resulting in increase in accidents and insurance claims.			
Increase in physical defects (deterioration) on footways due to lack of investment, resulting in increase in accidents and insurance claims.			
Incorrect ratio between programmed and reactive maintenance – leading to increase in defects/accidents			
Failure of contractors to deliver maintenance to agreed specification, cost – leading to increase in defects/accidents			
Extremes of weather may create exceptional maintenance demands (increase in defects/accidents)			
Planned maintenance leads to increased traffic congestion – delays/accidents			
Planned maintenance leads to increased Environmental problems – noise, pollution			

Key to likelihood rating

Likelihood	Risk Score	Definitions
Very high	4	Likely to occur each year/>60% chance of occurrence
Quite high	3	Likely to occur every 5 years/Up to 40% chance of occurrence
Quite low	2	Likely to occur every 10 years/Up to 20% chance of occurrence
Very low	1	Likely to occur every 10+ years/Up to 10% chance of occurrence

Key to Impact rating

Impact	Risk Score	H & S	Service Delivery	Cost	Reputation
Disastrous	4	Fatality/ permanent disability	Significant adverse impact on customers > 1 month duration	Over £1	Third Party Intervention Public Interest Report Regional / national media (long term)
Serious	3	> 20 days absence for > 5 people	Significant adverse impact on customers > 1 day duration	Up to £1M	Managed report to Corporate Management Team Regional media (short term)
Moderate	2	Short term absence for at least 5 people	Significant adverse Impact < 1 day duration	Up to £250,000	Managed report to management team Local coverage (medium / long term)
Minor	1	Short term absence for < 5 people	Significant adverse Impact for customers < ½ day	Up to £100,000	Managed report to business unit Local media (short term)

The risks identified as having red status have been assessed for ways to mitigate the risk and action plans for each of these risks are shown on the following pages

10 Forward Works Programme

Planned Maintenance works are programmed over current and future years with reference to the following:

- Anticipated funding
- Corporate and Service objectives
- Statutory obligations to maintain a safe highway
- Targets set for levels of service
- Current condition data
- Performance gaps between current and planned levels of service (km improvements required on the ground).
- Scheme types/treatment costs
- Engineering assessment of need
- Public perception of priorities
- Planned structural/carriageway resurfacing

A three year programme has been produced. However, this will need to be updated and revised on an annual basis as:

- New survey data
- Refined survey data
- Changes in budget
- Changes in current and desired service levels
- Changes in public perception of priority

11 Works Delivery

We are currently seeking new procurement framework/partnering agreements, possibly jointly with Stockport Council

12 Performance Measurement

Regarding reactive maintenance, performance is measured routinely in terms of percentage of Category 1 defects repaired within the specified time-period.

Regarding planned maintenance, target for improvements in Service Levels, as well as targets for outputs in terms of km improvements to the networks, are monitored via

Use of outcome performance indicators (Best Value Performance Indicators) – this data is assessed annually.

Performance against target is monitored and formally reported monthly and in a more detailed manner at 'KPI Away Days' which the senior management team attend. Improvement actions from the 'Away Days' are reflected in amendments made to the Performance Management System and are then monitored by the Senior Manager on a fortnightly basis

13 Improvement Actions

A number of improvement actionshave been identified to allow for better lifecycle planning:

Inventory data

We do not know enough about our Category 3 and 4 footways.

Condition/Demand/Performance Gaps/Performance Monitoring

Developing more robust deterioration models should assist with estimating future demands on the networks and identifying performance gaps.

Assess data requirements for road and footway condition to assist with the setting of performance targets that are less driven by BVPI's and the desire to reach the upper quartile.

Determine what would be optimal target condition for each class of road. Be clearer on what acceptable and good condition 'looks like' from a public point of view and to correlate with condition data.

Access and evaluate the potential effects that demands such as traffic volumes and composition have on the road network in terms of deterioration.

Use data from safety inspections and numbers of Category 1 defects to provide additional supporting information on the network's condition.

Update Maintenance History on UKPMS

Updating inventory information to the asset, such as surface/construction type, will assist with:

- Analysing condition data
- Determining rate of network deterioration
- Durability and effectiveness of material types
- Long cycle planning
- Identifying maximum use of resources

Long term strategy

Review the current strategy for improving/maintaining road and footway condition that is linked to long term improvements of the network, performance of materials and their lifecycles, value for money and identifying long term targets to aim for (that are linked to customer perception and priority). Assess all the options that are available including time related options utilising a lifecycle costing approach.

Produce a long term maintenance programme (ideally 10 years)

Maintenance audits

Introduce a maintenance audit for all proposed developments, new roads and other changes to the network to assess future maintenance costs of proposals and to help prepare the case for developer contribution to pay for the longer term cost of their development on the network

14 Life Cycle (whole life costing model)

Assumptions

(1) The maintenance profile for each type of road is based on:
   a) Assumed construction depths and materials
   b) Performance of materials based on theoretical data
   c) HA design guide
   d) Engineering experience in planned structural maintenance

(2) This "theoretical maintenance Profile or the extent of treatment at "major intervention" level has been modified to reflect current practice. Often particularly on urban unclassified roads only partial reconstruction is carried out at the major intervention levels.

(3) The calculation of the total budget to maintain "steady state" i.e. no deterioration has been further modified to reflect what budget has been available historically and the current level of deterioration.

An average value for steady state has been adopted based on that, calculated using the maintenance profile and that calculated from historical data.

(4) The assumptions are significant and therefore all the figures should be considered as approximate "ball park" figures.

(5) Trends using BVPI data is difficult due to changes in survey method and changes in the "rules and parameters" within MARCH UK PMS system.

ASSUMED CONSTRUCTION

PRINCIPAL ROADS/CLASSIFIED ROADS

35mm SMA
55mm dense bituminous b/c
210mm dense bituminous r/b
300 granular sub base

UNCLASSIFIED ROADS

30mm dense bituminous w/c
70mm dense bituminous b/c
150mm dense bituminous r/b
150mm granular sub base

PERFORMANCE OF DIFFERENT MATERIALS

Element	Performance (life in years)	
	Principal	Unclassified
Road base	20+	20+
HRA	25	25
DBM	12	12+
S/D	7	9

(Based on the 'Highway Maintenance Handbook") Edited by Ken Atkinson

Maintenance Profile Assumed (Simplified)

Principal/Classified

Year 0 - Construction
Year 15 - w/c
Year 30 - Base + w/c + 50% road base (major repair @ 30 Years)
Year 45 - w/c
Year 60 - Reconstruct (excluding sub base)

Unclassified Distributor

Year 0 - Construction
Year 10 - S/D
Year 18 - S/D
Year 26 - w/c plane and resurface
Year 36 - S/D
Year 44 - S/D
Year 60 - base+ w/c + road base*
*

(assumes sub base ok)

Estate Roads

Year 0 - Construction
Year 12 - S/D
Year 20 - S/D
Year 28 - S/D
Year 36 - Plane & resurface
Year 48 - S/D
Year 56 - S/D
Year 62 - S/D
Year 70 - w/c b/c* r/b

Footways

w/c + b/c + 50% sub base (once per lifetime of carriageway)

Kerbing

Take up and replace (once per lifetime of carriageway)

COST OF TREATMENTS

BUILDING UP OF RATES
(Q4 2001 Rates)

Principal Roads	Cost per m(£)
Plane and resurface w/c	
Plane	1.50
w/c	3.88
EO psv	0.35
	5.73
Plane and resurface w/c, b/c, 50% road base	
Deep plane	4.50
w/c	3.88
EO psv	0.35
b/c	4.14
r/b	7.25
	20.12
Plane and resurface w/c, b/c, 100% roadbase	
Excavate	10.56
w/c	3.88
EO psv	0.35
b/c	4.14
r/b	14.50
	33.10
Kerbing Costs	
Excavate and replace	7.85
	7.85
Footway	
Excavate 170	2.99
w/c 20mm	2.95
b/c 50mm	5.58
Edging	5.95
Sub base 50mm	1.08
	18.55

Unclassified Road Costs

S/D

Pre-surface dressing patching*	0 76	
Surface dressing	1.00	
	1.76	Rev 4 6.04

*assume a % of 5 if maintenance profile achieved S/D is cost effective in whole life costing terms if up to a max of 10% of the total carriageway surface required presurfacing dressing patching

Plane and resurface w/c

Plane	1.50
w/c	2 98
Tack coat	0 15
	4 63

Excavate and resurface w/c, b/c, 100% road base

Excavate	7.04
w/c	2.98
b/c	5 27
r/b	10.36
	25.65

SUMMARY SHEET

COSTS OF TREATMENTS PER ANNUM/m²

1 Principal/Classified

6.30 x 2	=	12.60
22.13 x 1	=	22.13
36.41 x 1	=	36.41
		71.14

Per annum 71.14/60 = £1.19 per m²

2 Unclassified (distributors)

1.76 x 4	=	7.04
5.09 x 1	=	5.09
28.22 x 1	=	28.22
		40.35

Per annum 40.35/60 = £0.67 per m²

3 Unclassified (estate roads)

1.76 x 6	=	10.56
5.09 x 1	=	5.09
28.22 x 1	=	28.22
		43.87

Per annum 43.87 = £0.62 per m²

4 Footways

18.55 x 1 = 18.55

Per annum 18.55/60 = £0.31 per m²

5 Kerbing

7.85 x 1 = 7.85

Per annum 7.85/60 = £0.13 per m²

HIGHWAY ASSET

kilometres of principal roads*	56
kilometres of classified	102
kilometres of unclassified	644

.*12 km dual carriageway

Area assumes carriageway widths

Principal	=	7 3m
Classified $\frac{(6+7\ 3)}{2}$	=	6.65
Unclassified $\frac{(6+5\ 5)}{2}$	=	5.75

Area of Carriageways (m²)

Carriageways	- principal	=	[(12x2x7.3)+(44x7 3)]	=	496,400
	- classified	=	(102 x 6.65) 1000	=	678,300
	- unclassified **	=	(644 x 5.75) 1000	=	3,703,000
Footway	- principal	=		=	201,600
	- classified	=		=	367,200
	- unclassified	=		=	2,318,400

** assumed split 50/50 estate/distributor

Length of Kerbing (m)

Kerbing

(56 + 102 + 644) 2 x 1000 = 1,604,000

SUMMARY OF ANNUAL BUDGET REQUIREMENT

MODIFICATION OF THE BUDGET BASED ON ANALYSIS OF ACTUAL MAJOR TREATMENT TYPES C/O 2003/04

Reconstruction (Actual Major Treatment Costs)

- The "reconstruction" or urban unclassified estate roads and distributor roads is complex.
- Although it is referred to as "reconstruction" where the sub base and/or road base 50+ years ago to a high standard and has not been affected by a high water table or poor drainage it may not be necessary to replace the sub base or even road base.
- The roads in Trafford vary dramatically in the south some residential roads (Groby Road for example) consist of "chatter" which has been surface dressed a number of times (no base of w/c). In the north of the Borough a large number of residential roads are either concrete or concrete overlayed with bituminous material or mastic asphalt.
- The amount of traffic varies quite dramatically on these roads.
- The drainage problem and costs are also extremely variable.
- Technique used 2004/5 structural maintenance works

  (a) Plane and resurface w/c

  (b) Plane w/c and b/c

  w/c
  b/c

  (c) Full reconstruction of carriageway
  No drainage

  (d) As (c) but includes aco drain

Of the works c/o in 2003/4

Type	% anticipated
(a)	10
(b)	50
(c)	30
(d)	10

The plane and resurface w/c only is considered to be the "intermediate" major treatment and (b), (c) and (d) considered as "reconstruction".

Reconstruction			(b) 50 x 10/9	56%
			(c) 30 x 10/9	33%
			(d) 10 x 10/9	11%
+				
(b)	Plane	c/w	4.50	
		w/c	2.98	
		b/c	5.27	
				12.75
(c)	Full reconstruction carriageway			25.65
(d)	as (c) but with aco drains assumed rate £70 per m (based on a 5m road)			53 65

Average cost of treatment -

= (12 75 x 0 55) + (26 65 x 0 33) + (53 65 x 0 11)

= 7 01 + 8.46 + 5 90

= 21 37/m²

SUMMARY SHEET

COSTS OF TREATMENT / M²

			£
1	**Principal Roads/Classified Roads**		
	Plane and resurface w/c	-	5.73*
	Plane and resurface w/c, b/c 50% road base	-	20.12*
	Plane and resurface w/c, b/c 100% road base	-	33.10*
2	**Unclassified Roads**		
	S/D	-	2.18
	Plane and resurface w/c	-	4.63*
	Excav. And resurface w/c, b/c 100% road base	-	21.37 (modify based on Actual treatments including for drainage)
3	**Footways**		
	Excavate w/c b/c 50% sub base	-	18.55
4	**Kerbing**		
	Take up and replace	-	7.85

* to be increased by 10% to allow for restricted working and minor drainage items and lifting iron work.

SUMMARY SHEET

COSTS OF TREATMENTS PER ANNUM/m²

1 Principal/Classified

6 30 x 2	=	12 60
22 13 x 1	=	22.13
36 41 x 1	=	36 41
		71 14

Per annum 71.14/60 = £1 19 per m²

2 Unclassified (distributors)

1 76 x 4	=	7 04
5 09 x 1	=	5 09
21.37 x 1	=	21.37
		33.50

Revised

Per annum 33 5/60 = £0.55 per m²

3 Unclassified (estate roads)

1 76 x 6	=	10 56
5 09 x 1	=	5.09
21.37 x 1	=	21 37
		37 02

Per annum 37 02/70 = £0 52 per m²

4 Footways

18 55 x 1 = 18 55

Per annum 18.55/60 = £0.31 per m²

5 Kerbing

7 85 x 1 = 7.85

Per annum 7.85/60 = £0.13 per m²

HIGHWAY ASSET

kilometres of principal roads*	56
kilometres of classified	102
kilometres of unclassified	644

*12 km dual carriageway

Area assure carriageway widths

Principal	=	7.3m
Classified $\frac{(6+7.3)}{2}$	=	6.65
Unclassified $\frac{(6+5.5)}{2}$	=	5.75

Area of Carriageways (m²)

Carriageways	- principal	=	[(12x2x7.3)+(44x7.3)]	=	496,400
	- classified	=	(102 x 6.65) 1000	=	678,300
	- unclassified **	=	(644 x 5.75) 1000	=	3,703,000
Footway	- principal	=		=	201,600
	- classified	=		=	367,200
	- unclassified	=		=	2,318,400

** assumed split 50/50 estate/distributor

Length of Kerbing (m)

Kerbing	(50 + 70 + 580) x 2	=	1,604,000

SUMMARY OF ANNUAL BUDGET REQUIREMENT

				£
Carriageways	Principal	496,400 x 1 19	=	590,716
	Classified	478,300 x 1 19	=	807,177
	Unclassified (distributors)	1,851,500 x 0 55	=	1,018,325
	(estates)	1,851,500 x 0 52	=	962,780
Footways	Principal	201,600 x 0 31	=	62,496
	Classified	367,200 x 0.31	=	113,833
	Unclassified	2,318,4000 x 0 31	=	718,704
Kerbing		1,604,000 x 0.13	=	208,520
				4,482,550
SD	1,851,500 x 012			222,180
	1,851,500 x 015			277,725
				499,905
		(Q4 2001)		4982.455

Works Costs Only

To cover Q4 2001 to Q3 2005 multiplication factor 1.1875

Hence cost 5,916,665 @ Q3 2005

Planned Structural	5,323,028
Preventative	5,593,637

TOTAL BUDGET REQUIRED
Based on Historical Spend

(Works and Fees)

Spend	Planned Structural Maintenance		NRG	TOTAL	Q3 2005 ADJ
Year	Rev 1	Capital			
Approx pre 2001 (Q4 1999)	1,000	250	250	1,500 x 1.287	1,930
2001/2 (Q4 2000)	1,104	577	300	1,981 x 1.237	2,450
2002/3 (Q4 2001)	944	583	300	1,827 x 1.187	2,168
2003/4 (Q4 2002)	222	601	300	823 x 1.137	935
2004/5 (Q4 2003)	-	2305	300	2,605 x 1.087	2,832
2005/6 (Q4 2004)	-	1354	300	2,750	2,750
				TOTAL	14,768
(1.25% inflation per quarter)				AVERAGE	2,109

This level of historical spend has resulted in a deterioration in roads requiring major treatments from say 5% to 15% i.e. 0.67% per annum

Just based on the urban unclassified (A, B, C deterioration is approximately at 5% level)

$\frac{0.67}{100} \times 644$ = 4.31 km not treated per annum

Cost per km = 1,000 x (25.65 x 1.1 x 5.75 + 2 x 7.85)
162,236 + 15,700
= 177,936 per km (Q4 2001)
= 177,936 x 1.1875 = 211,299 (Q3 2005)

Total under investment per annum = 4.31 x 211,299
= 910,698

- As full reconstruction is not carried out even on roads with zero residual life it was anticipated that the historical costs would be less than the theoretic al costs

  In the analysis an average of the theoretical and the historical costs is used.

  There is no modification to the theoretical treatment for preventative and therefore the full theoretical amount is required.

  Hence, based on historical spend –
  budget required to ensure no deterioration = £2,109K + £910K = £3019K

  Note. the historical spend analysis for deterioration included the NRA spend
  Hence structural maintenance = £3,019K
  NRA = £300K

  Planned Structural Maintenance works Costs only — Total £3,319

Budget requirements (At Q305)

	Theoretical	Historical	Average
Planned structural maintenance	5,023	3,318	4,020
NRA	300	300	300
Preventative	593	300	-
	5,916	3,918	4,320

Based on only 92% of the networking being maintained (i e. 8% at zero residual life at any one time and the "average" budget requirements from above

Planned structural maintenance	4320 x 0 92 =	3974
Preventative	593 x 0 92 =	546
		4520

Allow 10% for fees 4,972K

WORKS TO BE DELIVERED (PER ANNUM)
BASED ON VARIOUS BUDGET LEVELS (TABLE 1)

Total Value	Principal Roads		Classified Non principal roads		Unclassified		Cat I/Cat II Footways		Street Lighting	
£m	Budget	km	Budget	km	Budget	km	Budget	km		
3	361	0.6	547	1.1	1,842	5.8	-	-	250	170
6	650	1.1	941	2.1	3,315	10.8	94	1.5	1,000	250
10	946	1.6	1,408	3.1	6,552	21.3	94	1.5	1,000	250
10 (ALT)	650	1.1	941	2.1	7,315	23.3	94	1.5	1,000	250

(1) Roads include footways (associated)
(2) Existing budget 3M

EFFECT ON BVPI'S (Over a 3 year period) – TABLE 2

Total Value £m	BVPI 223 Condition of Principal Roads		BVPI 244A Condition of Classified (Non principal Roads)		BVPI 224B Condition of Unclassified		BVP 187 Condition of Cat I/ Cat II footways	
	Start	End	Start	End	Start	End	Start	End
3	8	11	6	9	16 9	19 9	25 3	25 3
6	8	8	6	6	16 9	16 9	25 3	8 00
10	8	5	6	3	16 9	12 1	25 3	8 00
	or 8	8	6	6	16 9	10 9	25 3	8 00

Footways brought up to similar standards

Condition of Principal Roads based on: CVI's Not Scanner

* Scanner results are not comparable

BUDGET SPLIT % (Steady State)
(of Total Budget)

Principal	(carriageways)	11	11
Principal	(footways)	1	} 2
Principal	(kerbing)	1	}
Classified	(carriageways)	16	16
	(footways)	2	} 3
	(kerbing)	1	}

Unclassified	(carriageways)	40	40
	(footways)	14	} 17
	(kerbing)	3	}

SD			10

Steady State - Highways £4,971K
Steady State - Street Lighting £1,249K

ie. Street Lighting Steady State budget equals 25% of Highways budget.

In order to coordinate highway repairs and column replacement works and ensuring footway works are not complete only to have them dug up for new street lighting columns. The budgets need to reflect the ratio of the steady state requirements. (The Street Lighting revenue budget needs to be considered when carrying out this calculation.

COSTS OF MAJOR TREATMENT PER KM

PRINCIPAL ROADS ('A' ROADS)

Costs to improve 1 km
Average width 10.8
Total area 10800 m²

Cost per m² 33.10 Sub Total = £357,480

Whilst 224(a) is just carriageway in reality in Trafford it is often not possible to carry out carriageway repairs without carrying out footway repairs

Footway area = 1000 x 1.8 x 2
Costs per m² = 18 55 Sub Total = £66,780
(Q4 2001 prices)

Kerbing = 2000
Costs per m² = £7.85 Sub Total = £15,700

TOTAL £439,960

At Q3 05 rates - £522,452

Including fees - £574,697

Cost to improve by 1% = $\frac{56}{100}$ x 574,697

£321,830

COSTS OF MAJOR TREATMENT PER KM

Classified B & C

Costs to improve 1 km
Average width $\frac{8.07 - 7.87}{2} = 8.0$
Total area 8,000 m²

Cost per m² £33.10 — Sub Total = £264,800
Q4 2001

Whilst 224(b) is just carriageway in reality in Trafford it is often not possible to carry out carriageway repairs without carrying out footway repairs

Footway area = 1000 x 1.8 x 2
Costs per m² = 18.55 — Sub Total = £66,780
(Q4 2001 prices).

Kerbing = 2000
Costs per m² = 7.85 — Sub Total = £15,700

TOTAL £347,280

At Q3 05 rates x 1.1875 - £412,395

Including fees - £453,634

Cost to improve by 1% = $\frac{102}{100}$ x 453,634 £462,706

COSTS OF MAJOR TREATMENT PER KM

UNCLASSIFIED

Costs to improve 1 km

Carriageway

Average width 7 2 m (previously 5 75)
Total area 7200 m²
Cost per m² £21 37 Sub Total = £153,864

Whilst 224(a) is just carriageway in reality in Trafford it is often not possible to carry out carriageway repairs without carrying out footway repairs

Footway area = 1000 x 1.8 x 2
Costs per m² = 18 55 Sub Total = £66,780
(Q4 2001 prices)

Kerbing = 2050
Costs per m² = 7 83
Q4 2001 prices Sub Total = £15,700

TOTAL = £236,344

At Q3 05 rates (1 18750) - £280,658

+ 10% fees - £308,724

Cost to improve by 1% = $\frac{655}{100}$ x 308,724 £1,988,182

COST OF WORKS

		Major Treatment per km	Costs to improve by 1%
Principal Roads	56km*	574,200	321,800
Classified Non Principal	102km*	453,600	462,700
Unclassified	644*	308,724	1,988,200
Cat I and Cat II footways	25	58,000	15,000

Costs include – footway and kerbing (Q3 05)

STEADY STATE

Highways £5M

Principal	-	650,000
Classified	-	950
Unclassified	-	3,350,000
SD	-	600
		5,000,000 (includes SD/SS)

Based on a budget of 2 7M (2005/6 level)

				BVPI Increase (condition reduced)
Principal	-	351,000	(299 000*) =	1%
Classified	-	513,000	(437,000*) =	1%
Unclassified	-	1,809,000	(1,541,000*) =	1%
		2,700,000		

* budget less than the steady state requirement

Effect of BVPI (over a 3 year period)

Annual budget £10M (£9M Highways)

Steady State	5,000,000
Principal road	292,600
B & C	420,600
Cat I and II footways	90,000
	£5,803,200

This leaves £3,196,800 for improving the urban unclassified

1.6% per annum

3 years 1.6 x 3 = 4.8

or

Steady state -	5,000,000
Cat I and II	90,000
	£4,910,000

All spent on urban unclassified – 2% per annum, 6% over 3 years

(above calculation ignores the effect of SD/SS

(However, this figure needs to be modified based on the following assumptions).

Annual Budget

	Steady State	% improvement	Add Budget	Total
A	650	1.67	537	1,187
'B & C'	941	1.00	462	1,403
Footway I & II	94	-	-	94
Street Lighting	-	-	-	1,500
			Total	**4,184**

Therefore budget spend on unclassified =	10,816
Steady State for unclassified =	3,331
Therefore additional improvement budget =	7,501
=	3 8%
=	11 3%

Total expenditure planned structural for improvements is £3,910,000 –

SD budget = £3,910,000 - £600k

= £3,909,400

Improvement per annum = £3,009,400

1,989,820 = 2%

However SD whilst only a prevention treatment has been used as the major intervention on some roads where reconstruction is not feasible – whilst this treatment is not long lasting it will improve the BVPI

Examples – Groby Road.
Wardle Road

And some cul de sacs where the volume of traffic is low and a more extensive treatment cannot be justified

Say 1 – 5 schemes per year dealt with in this way equals additional spend of say 200K

Improvements per annum = 3,3909,400+ 200
1988200

i.e. SD have no substantial effect

Techniques with Additional Monies

1 Surface dressing and slurry seal programme to continue

2 Techniques would not alter (even though more money)
(i.e maximise value for money)

3 In order to have "more of an impact"

- Carry out works on an area basis
(based on the SD/SS programmes. Plane and resurface/resurface footways which are too bad for SD or slurry but which would not under current circumstance have any treatment

- Plane and resurface footways programmes
(Washway Road etc)

- Larger schemes (longer lengths of road)
(This will enable increased expenditure)

- More plane and resurface on 'A', 'B' and 'C' to as appropriate in whole life costing terms (this would improve the BVPI as determined in accordance with the Scanner Survey techniques

IMPROVEMENT COSTS – (4 YEAR PERIOD)

Impact of BVPI performance over a 4 year period (15km per year)

			Cost per 1%	
BVPI	223	Start 8	321,800	2% per annum
	224(a)	Start 6	462,700	1½% per annum
	224(b)	Start 16.9	1,988,200	
	187	Start 25.3	15,000	

To reach 0% residual life over 4 years

223	2% per annum @ 321.800 =	643,600
224(a)	1.5% per annum @ 462,700 =	694,030
187	6.3% per annum @ 15,000 =	94,000

Steady state costs (4971)

Principal A	- 13% =	646
Principal B C	- 19 % =	944
Urban unclassified	- 68% =	3,380

Principal per annum	=	650 + 650 =	1,300
B & C	=	950 + 700 =	1,650
Cat I and Cat II	=	- 95 =	95
Unclassified	=	3400 + 7055 =	10,455
Street lighting			1,500
		Total	15,050

4 year improvement

Principal	=	650 x 4	=	2600
B & C	=	700 x 4	=	2800
Unclassified	=	7055 x 4	=	28,220
Cat I & II	=	95 x 4	=	380

% Improvement over 4 years

Principal	2600/321.8	=	8%
B & C	2800/462 7	=	6%
Unclassified	28220/1988 2	=	14 2%
Cat I & II	380/15	=	25 3%

Resultant % of roads with zero residual life

Principal	0%
B & C	0%
Unclassified	2.5%
Cat I & II	0%

Impact over 4 years 15m budget

	BVPI 223	BVPI 224(a)	BVPI 224(b)	BVPI 187
£15M	↑ 8%	↑ 6%	↑ 14.2%	↑ 25.3%

MAINTENANCE PLAN FOR CYCLEWAYS

SEGREGATED CYCLEWAYS MAINTENANCE PLAN

1. Goals and Objectives and Policies

There are a large number of goals and objectives that segregated cycleways contribute to.

Trafford Partnership's Vision "Trafford 2021: a blueprint" sets out the community's aspirations against four themes - live, learn, work, relax. The vision is that by 2021 Trafford residents will enjoy the highest quality of life in a safe, clean, attractive and sustainable environment with an excellent education system and first-class services. At a local level Trafford's Community Strategy to 2021 includes commitments to

- Improve east-west connectivity, reduce congestion, and improve the road network and road safety
- Improve and protect our high quality local environment and public open spaces, reduce pollution and the environmental implications of what we do
- Promote healthy lifestyles including participation in physical activity and sport

These commitments, echoed in Trafford's corporate priorities, can be assisted by cycleways.

At a sub regional level cycling provides a direct contribution to the Second Local Transport Plan (LTP2) shared objectives of Accessibility, Congestion, Air Quality, Quality of Life and Road Safety on which

Other policies and strategies include

- Draft Trafford Transport Plan – This plan provides a 15 year vision and strategy for transport in the Borough, setting out the key issues to be addressed and associated priorities for investment

- Cycling Strategy – This is a required document that links into LTP2. It demonstrates Trafford's commitment to cycling Furthermore, it demonstrates the involvement and consultation between the local authority and other organisations.

2. Inventory

The asset is made up of cycleways that are apart from and isolated from the main carriageway They may be cycle tracks, segregated cycleways or unsegregated cycleways They do not form a part of the carriageway or highway next to the main carriageway

As yet, we have no complete data on this other than the Greater Manchester cycling maps showing where to ride your bike The maps are due to be updated in April 2008 after consultation with the Trafford Cycle Forum and in consultation with traffic and highway engineers

The data that is included on these maps is reliable but cannot be taken as definitive

3. Asset Valuation

The total length of 'off road' cycleways will be evaluated in conjunction with the update of the Cycling Strategy and cycle network, this information will be available early in 2009. The Gross Replacement Cost will be based on the estimated cost for a similar footway reconstruction of £100,000 per km.

Asset Sub Group	Network Length km	Approximate Reconstruction Cost per km	Gross Replacement Cost (reconstruction cost)
Cycleways (off road only)		£100	
Total Costs			

The Depreciated Replacement Cost cannot be calculated at present, due to a lack of condition data, however, it is expected that this will be available in the upgraded document.

4. Condition

There is currently no robust regime of inspection or maintenance of cycleways in Trafford except where they are included in inspections of category 1, 1a and 2 footways and public rights of way. We are in the process of setting up a data set to ascertain a maintenance scheme. Once this is completed we will have a database of all assets. The database will be a part of the mapped information thus providing critical information about the surface type, condition, foliage, maintenance, obstructions and furniture condition.

As part of the update of our Cycling Strategy and cycle network, accurate data to assess the state of the asset will be collected. This will enable a maintenance programme and accurate scheme delivery. This will also provide an accurate current cycle map.

Ideally, a segregated cycleway should be a path without undue hindrance, difficulty or danger. When a cycleway is designed it should be in line with the Trafford Cycling Strategy and Greater Manchester's Concise Pedestrian and Cycle Audit.

Due to the lack of data and the fact that there is no robust system of maintenance or inspection the condition is predominantly unknown. Currently the conditions of all cycleways are reported by interested parties at cycle forums or as a result of inspections by parks and traffic staff.

5. Demand

What is the asset expected to deliver.

- Consistent reliable route for cyclists
- Accessibility (LTP2) – Cycling plays an important part in providing cheap, easily provided transport
- Congestion reduction

- Multi-modal transport – Commuters can cycle to Metrolink and rail stations for onward journeys
- Public health benefits
- Air quality.

Our aim is to bring about change by providing measures that encourage and promote cycling It is recognised that there are many advantages in providing and encouraging cycling as an alternative form of transport for short trips and as a source of recreational enjoyment

6. Performance Gaps

Because of the reasons identified below, it is not yet possible to identify any performance gaps for their asset group

Condition – As Trafford Council has only just started to collect this data, there is not a sufficient amount of data that can be reliably used at the present time

Demand – As we do not have reliable base data at present we cannot quantify our expected delivery above

The current Trafford Cycling Strategy and Greater Manchester Cycling Map form a basis for proposed cycleways as well as showing all defects to the cycleway within the study area. This has shown some deficiencies in the network and area of improvement by either extending or improving exiting routes and creating new links

7. Option Identification

There are a number of different options relating to this asset which are identified as detailed below.

- Routine Maintenance – Currently the maintenance of cycleways is carried out as per the highways structural maintenance programme
- Renewal/Replacement – Limited scope for renewal or replacement Cycleways will only be upgraded or improved, eg by varying the composition of the surface or widening the width available for cyclists
- Creation/Acquisition/Upgrading – LTP2 and developer funded schemes by varying the composition of the surface or widening the width available for cyclists or creating new cycleways on the recommendation of the development control engineers
- Disposal – N/A

8. Budget

Funding comes from the main highways capital funding which is derived from the LTP Maintenance allocation and Trafford's own contribution to local roads from local Rates.

Most funding for improvement will consist of developer funding through S106 agreements for new developments

External bids are also regularly made to for funding, eg DFT, Cycle England, SUSTRANS. This funding is not substantial but can contribute approximately £500,000 to the cycling budget.

What is the process for ranking schemes

Interested parties, including officers, members, and cycle forum members, are asked for their nominations for new/improved cycle facilities as part of the Trafford Cycling Strategy refresh.

All of the schemes were assessed against their probate impact on the target for the LTP2 of increasing the number of cycling trips.

The assessment will include:

- Buildability
- Cost
- Linking with other routes
- Location
- Linking with facilities/services such as town centres, leisure facilities, schools, employment, health etc.

Priorities are mostly based on the high impact, high priority list in the LTP2, but priorities could change if additional external funding is secured.

9. Risks

The risks associated with maintaining cycleways in Trafford have been reviewed and a total impact score and likelihood identified. A traffic light system of red, amber or green shows whether the risk requires an action plan to mitigate the risk, whether the risk can be tolerated but kept under review or the risk can be tolerated

Risk – event	Total impact score	Likelihood	Status
Successive dry summers causing shrinkage and thereby creating maintenance need	9	2	Amber
Severe snow or ice for 1 week resulting in serious injury or insurance claim	7	3	Amber
Failure of bridge causing personal injury	10	1	Green
Cycle crash caused by tree root lifting cycleway causing personal injury	15	3	Red
Overgrowing of foliage along route causing minor injuries and disruption	8	4	Red
Failure to achieve LTP2 target	10	3	Red

Key to likelihood

Likelihood	Risk score	Definitions
Very high	4	Likely to occur each year / up to 60% chance of occurrence
Quite high	3	Likely to occur every 5 years / up to 40% chance of occurrence
Quite low	2	Likely to occur every 10 years / up to 20% chance of occurrence
Very low	1	Likely to occur every 10+ years / up to 10% chance of occurrence

10. Forward Works Programme

The forward works programme is being developed as part of the Trafford Cycling Strategy refresh

11. Works Delivery

The main method for delivering work is as part of the Highways and Transportation contracts There are two different contracts that may be involved with the delivery of required works for this asset

12. Performance Measurement

LTP3 gives an annualised index of cycling trips on selected routes. This will give the council an indication of the level of cycle trips undertaken on the monitored routes. The trips will be counted by using loop or radar detection. These figures will be used to see if there has been an increase in cycling by 6% on 2005/06 levels.

13. Improvement Actions

- The collection of condition and location data throughout Trafford, by involving the Cycle Forum, neighbourhood forums and national cycling groups (Sustrans, CTC).

- The classification of route hierarchy. This will indicate the level of importance of the route. A maintenance programme can then be organised based on levels of use. This would also indicate areas for winter maintenance.

- Identification of on road, off road and shared cycleways. This will assist in the route hierarchy and in the maintenance of these routes.

- GIS mapping of all routes.

- Production of a robust maintenance programme to cover routine cycleway maintenance and inspection, by involving area office staff and current maintenance inspectors. This will give us a reliable knowledge of the state of our network. Providing updated information on surface state and furniture replacement/attention if needed.

- Condition data survey/inspection programme by using information obtained by the robust maintenance programme to cover routine cycleway maintenance and inspection, by involving traffic officers and current maintenance inspectors and sporadic data obtained by parks and highways officers. This can be added to the database to provide up-to-date information to feed back into the maintenance programme for the area office. Exact knowledge of the cycle network location can provide valuable data for the linkage of our network. Improving the linkage should increase usage.

- Relevant revenue budget to maintain the current cycle network.

- The placement of cycleways into the LDF (local development framework) would ensure that the developer funding/works could contribute to the expansion of the exiting cycle network. Cycle routes will be taken into account when planning applications are received.

- Enter into a new agreement/partnership with Sustrans, Mersey Valley and Transpennine Trail whereby their rangers provide additional information and inspections to keep the cycling network open and attractive.

Our vision is to create an environment within Trafford where people of all ages and abilities feel able to cycle safely, conveniently and pleasantly. In order to achieve this we need to improve conditions for cyclists, improve the safety of cycling, improve cycle security, promote a cycling culture, and integrate within other relevant initiatives.

The above can, however, only be done if a robust inspection and maintenance regime are created This will encourage more cycling as cycleways will be made to be more attractive. With an up-to-date maintenance programme, safe, secure comfortable cycleways can be created and maintained. This will then be maintained by the inspections. Thus creating an environment suitable for enjoyable cycling for all ages.

MAINTENANCE PLAN FOR HIGHWAY DRAINAGE

Information to be provided in upgraded document

PUBLIC RIGHTS OF WAY (PRoW) MAINTENANCE PLAN

PUBLIC RIGHTS OF WAY (PRoW) MAINTENANCE PLAN

1. BACKGROUND

As the Highway Authority the Council has certain statutory duties relating to the protection and maintenance of public rights of way and the keeping of legal records:

It has a duty to assert and protect the rights of the public to be able to use highways for which it is the highway authority. If these highways are public footpaths or bridleways they are recorded on the Definitive Map and Statement for the area. Definitive Maps and Statements are legal documents which provide conclusive evidence of the existence, location and status of the public rights of way recorded on them.

It also had a duty to keep the Definitive Map and Statement up to date and under continuous review. The Definitive Map must be available for the public to view on request.

In addition to legal records, the authority has a duty to ensure that recorded rights of way are maintained in a condition suitable for their expected use, and must be protected for the public's enjoyment.

The Council has inherited a Definitive Map from Greater Manchester Council. This represents the local government area at the time of the preparation of the original Definitive Statement. Little or no Definitive Map work has been carried out in this area since the original maps were produced. A great deal of development has taken place and many changes have been made to the public rights of way network. As a result the records are up to 25 years out of date and sometimes difficult to interpret.

2. GOALS AND OBJECTIVES

Goal:

Trafford BC seeks to provide a Prow network that is clearly defined, legally correct and well maintained, so that it is safe to use and accessible to all (as far as is reasonably possible).

Objectives:

Meet statuary obligations and legal duties in respect of PRoWs

Meet central Governments "Ease of Use" performance targets and any internal targets (Local Transport Plan & Rights of way Improvement Plan)

Maintain the network to defined standards

Respond to complaints / information from the public within clearly defined time limits

Endeavour to provide an alternative "non motorised" sustainable transport network link to urban and rural communities alike.

Enhance and promote leisure and recreational opportunities to promote Trafford and access to the countryside

Minimise risk and legal liability (injury claims)

3. INVENTORY

Trafford Council has approximately 106 618 km public rights of way recorded on the Definitive Map and Statement, which are in the rural and urban areas

Public Rights of Way

Definitive Status	Length	Number of paths	Approx % of Network
Footpath	94 012 km	240	88%
Bridleway	1 76 km	2	2%
Restricted Byways	10.846 km	17	10%
Total	**106.618 km**	**259**	**100%**

Path Furniture

The Council has a duty to signpost all public rights of way where they leave a metalled road.

Currently there is no information on the numbers of various paths furniture but this information will be gathered in full year 2008/9 and 2009/10

Type	Number (approx)
Stiles	
Gates	
Bridges	
Cycle barriers	
Signposts	

4. SURVEY DATA

The Definitive Map areas are:

Area	Scale	Print	Relevant date
Altrincham Stretford Urmston Sale	1.10,000	Black and white	10th February 1984

The condition of Trafford's public rights of way has been assessed each year to produce the national performance indicator BVPI 178 – Ease of Use. This process will no longer be a national measure of performance from the end of 2007, but in the short term the Council will continue to use the survey to monitor our performance each year.

The recommended approach for the assessment is to randomly at least select 5% of the network, by length, as a 'snap shot' of the condition of the network.

The survey is carried out twice per year, on part in spring and the other in autumn, to allow for differences caused by the weather and farming year. The methodology used is that developed and recommended by the former County Surveyors Society (CSS) and is approved by the audit commission.

BVPI Survey information

	BVPI 178 (% Pass)		
	2005/06	**2006/07**	**2007/08**
Overall Ease of Use	51.92	68.6	75

Type and Location of data storage

The data is stored in the following formats and locations:

Hard paper copy and electrically within the PROW section

5. ASSET VALUATION

Valuation of Assets

The main PRoW infrastructure (footpaths, bridleways and restricted byways) presents a problem for valuation purposes. In most cases PRoWS have not been constructed or maintained to any defined standard although Trafford as the Highway Authority has a legal duty to maintain them to a standard appropriate for their use

The majority of footpaths are 'naturally' surfaced, grass or earth but some are 'metalled' in urban areas Bridleways and byways exist mainly on metalled / unmetalled farm tracks or green lanes with a variety of surfacing materials.

Collectively as there is no accurate information in respect of the various surfacing types and condition of the asset to make a realistic valuation on maintenance or replacement costs

Records of the location and current condition of highway furniture is at this time incomplete and not reliably recorded or known, the types and numbers have been assumed and costed on a modern replacement value Replacement values have been based on standard items and variations a higher cost may have to be introduced where appropriate following better information

Asset	Maintenance / replacement cost Per km/item	Gross replacement cost	Length / Number
Footpath (maintenance per km)	£10,000 00	£940,120 00	94 012 km
Bridleway (maintenance per km)	£12,000 00	£2,112 00	1 76 km
Restricted Byway (maintenance per km)	£15,000.00	£162,690 00	10 846
Stiles	£1,000 00	£50,000 00	50
Gates	£500 00	£50,000 00	100
Cycle barriers	£1,000.00	£100,000 00	100
steps	£300 00	£6,000 00	20
fingerposts	£300 00	£30,000.00	100
Waymarker posts	£200 00	£100,000 00	500

Depreciated Replacement Cost (DRC) Value Table

There is no accurate or up to date asset condition information for PRoWs available at this time. Depreciated costs and the remaining life of the asset have been made on assumptions by the PRoW Engineer and by reference to the no. of structures that have been seen to fail in the BVPI 178 survey data.

Assumed service life	asset	Estimated replacement cost	DRC Estimated current value	Annualised depreciation charge
20	Footpath (maintenance per km)	£10,000.00	£5,000.00	£250.00
20	Bridleway (maintenance per km)	£12,000.00	£6,000.00	£300.00
20	Restricted Byway (maintenance per km)	£15,000.00	£7,500.00	£375.00
10	Styles	£1,000.00	£500.00	£50.00
20	Gates	£500.00	£250.00	£12.50
10	Barriers	£1,00.00	£500.00	£50.00
20	Steps	£300.00	£150.00	£7.50
20	Finger posts	£300.00	£150.00	£7.50
10	Waymarker post	£200.00	£100.00	£10.00

The overall PRoW asset has an estimated gross replacement cost of £1,440,922.00

The current estimated depreciated value of the PRoW asset is £720,461.00

The annualised depreciation charge, the amount that the asset would depreciate by each year if no maintenance works were carried out is £42,745.00

6. MAINTENANCE

6.1 ROUTINE MAINTENANCE

Currently no routine maintenance is carried out on PRoWs

Responsibility for maintenance of path furniture

Landowners are responsible for the maintenance of any stile, gate, bridge or other structure on a public right of way. Path furniture must be maintained in a safe condition so as to prevent unreasonable interference with the rights of users.

A landowner is entitled to claim a minimum of 25% of the cost of such maintenance from the highway authority in recognition of the dual function of structures for stock control purposes and the public access, although the authority often offers to replace stiles and gates free of charge to ensure they are of a satisfactory standard

Bridges on the route of PRoWs crossing natural features such as rivers or streams can be the responsibility of the Council as the Highway Authority.

Rights of Way Improvement Plan (ROWIP)

Under the provisions of the Countryside and Rights of Way act 2000, most local authorities in England including Trafford are required to publish a Rights of Way Improvement Plan (ROWIP) covering all of their area by November 2007

The First Stage ROWIP has been completed and the Second Stage is expected to be published in late 2008

7. DEMAND

What is the asset expected to deliver

Current demand

- A well maintained network that is safe to use and to be accessible to all.
- Bring the PRoW network up to the minimum standard as set out by the Audit Commission in respect of the former BVPI 178 'ease of use survey' and meet Central Government and internal performance targets
- Meet legislative and statutory duties in respect of PRoW

Future demand

- Prepare 10 year Rights of Way Improvement Plan

- Increasing emphasis and legislation from Central Government to provide alternative non-motorised transport links and enhance access to the countryside.
- Disability Discrimination Act imposes a duty coupled with a public demand for a more accessible network of PRoWs.
- Carry out inventory and condition survey of all PRoWs to enable maintenance programmes and budget provision to be developed.

8. PERFORMANCE GAPS

Prioritised rights of way improvements have been considered within the new LTP2 LTP block capital funding may be used to support capital schemes included in the LTP programme

The following tasks have been identified and will need to be undertaken to reach a 'steady state' and provide a good level of service

8.1 ASSET MANAGEMENT

- Create a Statement of Priorities (for undertaking the review of the Definitive Maps and Statements of Public Rights of Way).
- Remove backlog of legal events requiring orders to be made and process further legal event orders, as required, within defined timescales
- Remove backlog of applications to modify the Definitive Map and Statement and determine new applications within defined timescales
- Determine outstanding matters which may result in changes to the Definitive Map and Statement, and process new cases within defined timescales
- Process all determined applications and other cases awaiting Definitive Map Modification Orders within defined timescales
- Publish definitive Maps and Statements, from time to time, to ensure the availability of an up to date legal document.
- Prepare and publish updated Definitive Statements for every public right of way.

8.2 MAINTENANCE

- Deal with all outstanding 'Requests for Action' from customers, and address within defined timescales
- Adopt a range of PRoW Policies and Procedures in order for the Authority to be able to protect and assert the public's rights
- All PRoWs are correctly signposted where they leave a metalled road
- 100% condition survey is carried out each year
- Address the backlog of obstructions and remove all misleading notices, other hindrances or impediments to use Future cases then dealt with within defined timescales.
- All authorised path furniture (stiles, gates etc) to be in place, maintained in a safe and convenient condition, and future problems resolved within defined timescales
- All bridges maintained in a safe condition and future problems resolved within specific timescales

- The surface of every PRoW to be in proper repair, reasonably safe and suitable for expected use.

- Way marks and signposts are provided at all other necessary locations, over and above statutory duty.

- Remove backlog of Public Path Orders to change the network and determine all new applications within defined timescales.

- Assistance available to farmers and landowners to help them comply with their responsibilities and positively manage PRoW on their land.

- Create a Development Plan (which identifies proposals for the development of PRoW to take into account modern recreational and agricultural needs).

8.3 PUBLICITY

- Keep the Local Access Forum informed of all matters relating to the public's use of the countryside.

- Have Definitive Maps and Statements widely available for public inspection.

- Provide, publish and endorse a range of promoted routes and activities offering a range of opportunities in the countryside for different classes of user.

- Arrangements in place to monitor and maintain high standards on promoted routes. (e.g. Trans Pennine Trail).

- Provide and publish a range of information to assist users, developers and any other customers who may require assistance on any matter relating to public paths. (e.g. development across public rights of way).

- Keep web site up-dated with all the latest news and consultation links.

9. FORWARD WORKS PROGRAMME

How are future works to be programmed?

Work packages are to be developed to address the maintenance needs of the PRoW network collated from inspection data obtained from BVPI 178 inspection, Ramblers Association surveys and from information forwarded by footpath users and the general public.

10. WORKS DELIVERY

How are works to be delivered?

The Council is committed to addressing all the major issues with the PRoW network Initially 2008 – 10 works will be delivered by top slicing the Highway's maintenance budget to remove existing backlog, LTP may funding is available, the PRoW Team will actively seek alternative funding and grant where appropriate.

11. RISKS and RISK MATRIX

The risks associated with maintaining the PRoW network in Trafford have been reviewed and a total impact score and likelihood identified, these are summarised in the table below A "traffic light" system of red, amber, green has been adopted to show whether a risk requires an action plan to mitigate the risk (red), whether the risk can be tolerated but kept under review (amber).or the risk can be tolerated (green)

Risk - Event	Total impact score	likelihood	status
Outbreak of major animal disease resulting in path closure	13	3	**Red**
Collapse of PRoW bridge	10	2	Amber
Collapse of PRoW bridge causing personal injury	10	3	**Red**
Severe weather for up to one week	7	2	Green
User of PRoW attacked by land owner or livestock	10	1	Green
Severe flooding / erosion of river or stream bank	15	3	**Red**
Serious injury or fatality caused by tree fall	10	1	Green
Broken PRoW furniture causing personal injury	10	3	**Red**
Failure to achieve ease of use targets	14	3	**Red**
Trip caused by lack of surface maintenance causing personal injury	10	3	**Red**

MAINTENANCE PLAN FOR PASSENGER TRANSPORT INFRASTRUCTURE

Information to be provided in upgraded document

MAINTENANCE PLAN FOR PEDESTRIAN BARRIERS

Information to be provided in upgraded document

MAINTENANCE PLAN FOR SAFETY CAMERAS

Information to be provided in upgraded document

MAINTENANCE PLAN FOR STREET LIGHTING, BOLLARDS AND SIGNS

MAINTENANCE PLAN

- **STREET LIGHTING**
- **BOLLARDS**
- **SIGNING**

1 Goals, Objectives and Policies

Corporate Objectives 2006/07

The Trafford Council Corporate Plan contains eleven corporate objectives four of which are directly related to highway maintenance.

These priorities have been developed into a set of corporate objectives to steer service planning in the medium term:

1 to increase the safety of individuals and communities

2 to improve care, support and health outcomes for vulnerable adults, older people and informal carers

3 to improve access, timeliness and standards

4 to improve awareness of Trafford as a place to live, work and visit

5 to support local businesses and regeneration

6 to improve access to skills development for the world of work

7 to improve outcomes for all children and young people

8 to improve the cleanliness and sustainability of the local environment

9 to support diversity, promote equal access to facilities

10 to improve access to sports, arts and leisure facilities

11 to improve our use of available resources (time, staff, money, premises)

The principles which underpin and define the objectives of highway maintenance are:

- Network Safety

  i) Complying with statutory obligations

  ii) Meeting users needs

- Network Serviceability

  i) Ensuring availability
  ii) Achieving integrity
  iii) Maintaining reliability
  iv) Enhancing quality

- Network Sustainability

  i) Minimising cost over time

  ii) Maximising value to the community

  iii) Maximising environmental contribution

Street Lighting Objectives/action plans

- To replace all Category 4 and Category 3 columns within the period 20/07/08 – 20/10/11

- To review and update the street lighting maintenance policy, taking into account the new code of practice for "Well Lit Highways"

- Deliver customer required service levels

- To conform with the good BVPI results for number of outages and the time to repair outages

- To future proof new columns/installations to allow for CMS (computerised management systems)

- To look at new ways to reduce energy costs

Authority: TRAFFORD COUNCIL

Note: Figures in Tables A to D should relate to road lighting equipment only in 2004. Exclude Parish Council lighting etc. and illuminated traffic signs, feeder pillars and illuminated traffic bollards.

Table A – Primary factors
Totals in Table A and B should be equal

Column material	Age in years	Number of columns by column mounting height							Total columns
		4m (or less)	5m	6m	8m	10m	12m	Over 12m	
Mild steel (tubular and sheet)	0 - 20	82	5,383	3,,425	2390	3,961	763	17	16,021
	21 - 30		920	690	560				2,170
	31 - 40								0
	Over 40								0
	Total	82	6303	4115	2950	3,961	763	17	18,191
Stainless steel	0 - 20								0
	21 - 30								0
	31 - 40								0
	Over 40								0
	Total	0	0	0	0	0	0	0	0
Concrete	0 - 20		810	22					832
	21 - 30		1376	28	100				1506
	31 - 40		3525	62	91	6			3684
	Over 40								0
	Total		5713	112	191	6	0	0	6022
Aluminium (tubular and fabricated)	0 - 20								0
	21 - 30								0
	31 - 40								0
	Over 40								0
	Total	0	0	0	0	0	0	0	0
Cast Iron	0 - 20								0
	21 - 30								0
	31 - 40								0
	Over 40								0
	Total	0	0	0	0	0	0	0	0
Wood include poles mounded on electricity /telecom poles	0 - 20								0
	21 - 30								0
	31 - 40								0
	Over 40								0
	Total	0	0	0	0	0	0	0	0
Composite Include fibre glass and GRP	0 - 20								0
	21 - 30								0
	31 - 40								0
	Over 40								0
	Total	0	0	0	0	0	0	0	0

Column material	Age in years	Number of columns by column mounting height							Total columns
		4m (or less)	5m	6m	8m	10m	12m	Over 12m	
Other include structure mounted eg wall brackets, subways under passes, tunnels, under bridges	0 - 20								0
	21 - 30								0
	31 - 40								0
	Over 40								0
	Total	0	0	0	0	0	0	0	0
All	**Total**	**82**	**13,161**	**4630**	**3207**	**4168**	**763**	**24**	**26036**

ILLUMINATED BOLLARDS

No.	Age in years	Cost New (Replacement Costs)	Manuf. Life
1226	Assume all >20 years	350	20 years

ILLUMINATED POLES

Pole Type	Age in years	No.	Cost New (Replacement Costs)	Manuf. Life
Sign Poles	0 – 10	1500	350	30 years
	11 – 20	800	350	30 years
	20 - 30	717	350	30 years
Zebra Safes	0 – 10	110	1100	30 years
School crossing patrols	0 – 10	45	900	30 years
	11 – 20	10	900	30 years
Refuge Poles	0 – 10	60	350	30 years
	11 – 20	46	350	30 years

ASSET VALUATION

CURRENT VALUE

STREET LIGHTING

Column Material	Age in years	Column Height	No	Cost New (Replacement cost incl lantern, UU)	Manuf. Life	Life Exp with Ptg	Current Value	Total
Steel	0-10	5+6	3500	1200	25 yrs.	40 yrs	900	3,150,000
		8	1400	1400	25 yrs	40 yrs	1050	1,470,000
		10	2000	1600	25 yrs	40 yrs	1200	2,400,000
		12	448	1800	25 yrs	40 yrs	1350	604,800
	11-20	5+6	5650	1200	25 yrs	40 yrs	600	3,390,000
		8	1059	1400	25 yrs	40 yrs	700	741,300
		10	1944	1600	25 yrs	40 yrs	800	1555200
		12	400	1800	25 yrs	40 yrs	900	360,000
	21-30	5+6	1400	1200	25 yrs	40 yrs	300	420,000
		8	560	1400	25 yrs	40 yrs	350	196,000
Concrete	11-20	5+6	814	1200	25 yrs	40 yrs	600	488,400
	21-30	5+6	1400	1200	25 yrs	40 yrs	300	420 000
		8	100	1400	25 yrs	40 yrs	350	35,000
	31-40	5+6	3600	1200	25 yrs	40 yrs	150	540,000
		8	91	1400	25 yrs	40 yrs	175	15,925
		10	6	1600	25 yrs	40 yrs	200	1,200
Concrete sleeved	11-20	5+6	298	1200	25 yrs	40 yrs	600	178,800
		8	67	1400	25 yrs	40 yrs	700	46,900
	21-30	10	197	1600	25 yrs	40 yrs	400	78,800
					25 yrs	40 yrs		
Cast Iron	31-40	5+6	1385	1200	25 yrs	40 yrs	150	207,750
High Masts	0-10		17	10,000		40 yrs	7500	127,500
								16,427,575
								CURRENT VALUE

ILLUMINATED BOLLARDS

No	Age in years	Cost New (Replacement Costs)	Manuf Life	Value 50%	Total £
1226	Assume all >20 years	350	20 years	175	214,550
					214,550

ILLUMINATED POLES

Pole Type	Age in years	No	Cost New (Replacement Costs)	Manuf Life	Value 50%	Total £
Sign Poles	0-10	1500	350	30yrs	231	346,500
	11-20	800	350	30yrs	115	92,000
	20-30	721	350	30yrs	57	40,869
Zebra Safes	0-10	110	1100	30yrs	726	79,860
School x-ing Patrols	0-10	45	900	30yrs	594	26,730
	11-20	10	900	30yrs	297	2,970
Refuge Poles	0-10	60	350	30yrs	231	13,860
	11-20	46	350	30yrs	115	5,290

						608,079

ASSET VALUATION

GROSS REPLACEMENT COST (GRC)

(Prices at Q4 2004)

STREET LIGHTING

Existing		Replacement							
Column Ht.	No	Column Ht.	Lantern	UU Costs (Transfer) £	Cost (per col) £	No Inc + 15%	Total £	+ 10% fees	Total Cost
5+6	18047	6	70w Son	358	1200	20754	24,904,800	2,490,980	25,153,800
8	3277	8	100w Son	358	1400	3768	5,275,200	527,520	5,802,720
10	4147	10	150w Son	358	1600	4769	7,630,400	763,040	8,3903,440
12	848	12	250w Son	358	1800	830	1,494,000	149,400	1,643,400
12		12	400w Son	358	2000	18	36,000	3,600	39,600
High Mast	17				10,000	17	170,000	17,000	187,000
								TOTAL	**41,219,960**

ILLUMINATED BOLLARDS

Existing	Replacement Flex-Plastic with Domed base c/w photo-cell and twin 11w lamps. Including St/ltg services/Terminations		
No.	No.	Cost (per bollard) £	Total £
1226	126	350	429,100
			429,100

ILLUMINATED POLES

Existing		Replacement		
Pole Type	No	No	Cost £	Total £
Sign Poles	3017	3017	350	1,055,950
Zebras Safes/Beacons	110	110	2200	121,000
School x-ing Patrols	55	55	900	49,500
Refuse Poles	106	106	350	37,100
				1,263,550

STREET LIGHTING

Q4 2004

Street Lighting Total replacement Value	£41,219,960
Current Value	£16,427,575
	£24,792,325

(To remove maintenance backlog at any one time average depreciation 50%)

Anticipate Total Replacement Value = £20,609,980

Therefore to bring stock up to anticipated level - £4,182,345
(£20,609,980 - £16,427,575) =

Steady state costs – Total Replacement Value
Life Expectancy
= £41,219,960
40
= £1,030,499

Annualised depreciation cost = £1,030,499 Q4 2004
X 1 375 (->Q32005)

Note
The manufacturers life expectancy is 25 years
Value used in this calculation is 40 years on the assumption that the columns are painted 4 times in that life span
Total whole life cost = painting and replacement

This compares with a cost of £1,648,798 per annum in the painting i not carried out
(not brought to net present value)

ILLUMINATED BOLLARDS

Current value assume

Illuminated Bollards Total Replacement Value	£429,100.00
Current value assume	£214,550
* to bring state up to "steady state"	0

* assumed being maintained at "steady state"
(average age of bollard is manufacturers anticipate life

$$\text{Steady State Costs} = \frac{\text{Total Replacement Cost}}{2}$$

$$\text{Life expectancy}$$

$$= \frac{429,100}{20}$$

$$= 21,455$$

ILLUMINATED POLES

Sign poles
Zebra safes
School crossing patrols
Refuse poles

Total replacement cost £1,264,550

Current value £608,079

* to bring stock up to "steady state" 0

* assumed currently being maintained at "steady state"

(i.e. average age of pole is $\frac{\text{manufacturers anticipated life}}{2}$

Steady state costs per annum = $\frac{£1,263,550}{}$

= £42,118

STREET FURNITURE

Replace	Replacement Value	Annual Budget to maintain in steady state
None illuminated signs -	1,786,500	44,663
Street name plates -	1,440,000	41,143
Litter bins -	280,000	144,000
Bollards -	340,000	5,500
Public seats -	290,000	9,666
Pedestrian guard rails -	1,055,000	30,143
Life buoys -	1,000	500
Amco Barrier -	3,750,000	93,750
Fences/walls -	unknown	
Total replacement cost	**£8,942,500**	**£239,365**

Assumed that all these items an average ago is ¾ of the manufacturers life span.

If we assume manufacturers life expectancy

None illuminated signs	40 years
Street name plates	35 years
Bollards	40 years
Litter bins	20 years
Public seats	30 years
Pedestrian guard rails	35 years
Life buoys	2 years
Amco Barrier	40 years

Therefore: to bring stock up to steady state £2,235,625

4.0 Condition

1 In 2006/7 Trafford Council commissioned CMT (Testing) Ltd to carry out a comprehensive none destructive testing of the street lighting stock

Ultrasonic testing was carried out in accordance with the ILE Technical Report No 22 on the steel columns and a visual inspection of the concrete columns.

2 The columns were then classified in accordance with the "traffic light system" detailed in the ILE report referred to, as added below

High priority – replace as soon as possible
Medium to high priority – replace within 2 years
Medium to low priority –
Acceptable –

Category	Operational Risk Assessing Rating	Treatment Action
	HIGH	Supports identified as at High Risk should be actioned immediately of programmed for replacement within a safe time so as not to endanger the highway user • *Recommended Treatment Option immediate replacement/ action or works within a maximum period of 12 week*
	MEDIUM TO HIGH	Supports identified as at Medium to High Risk should be programmed for remedial works so as not to endanger the highway user • *Recommended Treatment Option immediate replacement/ action or works within a maximum period of 24 week*
	MEDIUM TO LOW	Supports identified as at Medium to Low Risk should be monitored and re-inspected within an 18 month period and/or re-categorised • *Recommended Treatment Option Carry out detailed inspection to evaluate/confirm assessment Instigate a programme of specialist assessment i e SSST or NDT* • *Recommended Treatment Option· Check assessment against support specification and re-categorise or add to the strategic works programme (Forward Programme).*
	ACCEPTABLE	Supports identified as Acceptable should reply on information detected as part of future Operational Condition assessment undertaken within a maximum of 3 years • *Recommended Treatment Option Carry out new condition assessment as part of a routine maintenance strategy.*

CURRENT CONDITION

RESULTS OF THE SURVEY

Total Number of Columns	26,569
Category 4	985
Category 3	751

Cast iron columns have been considered separately. These total 1,176 and are replaced in conjunction with Planned Structural Maintenance Schemes.

INSPECTION REGIME

(a) **Standard Equipment**

- **Outages**
  - principal routes – night time inspection carried out
  - none principal – based on public reports

- **Visual Inspections** (of column and internal electrical connections etc)

  - every 2 years (carried out at the same time as clean and block charge)

- **Electrical Inspection/Testing**

  - every 6 years. Carried out by a qualified electrician testing in accordance with IEE Regulations

(b) **High Masts**

- every 10 years Structural inspection and report This includes – columns, winches head frame, foundations and painted
- electrical inspection/testing carried out as above

4. **Desired Condition**

To replace all Category 4 and Category 3 columns by 20/10/11

5 Demand

- Population change
- Change of traffic flows and composition – particularly changes in volume of Goods Vehicles (GVs)
- Extremes of weather
- Public need and perception of service "public perception of increase in crime".
- Need to improve condition to help meet accident reduction targets
- Public perception of increased crime and that this is reduced by improved lighting

Public Need and Perception

The following identify the community view that the condition of the highways is seen as important·

- Community plan
- Corporate objectives
- Mori Poll 2006/7

6 Performance Gaps

Performance gaps have been identified as the difference between the current and desired condition (level of service)

The performance gap can be calculated based on

- Achieving stated target

The performance gap between customer expectations and actual are awaiting the works outlined earlier

7 Option Identification

There are a number of factors to be taken into account when determining options for improving/maintaining the condition of the network:

- Budget Allocation
- Statutory obligations
- Current condition of the network and predicted levels of deterioration
- Current/Desired Levels of Service (expressed as targets)
- Public perception of priorities

8 Budget Optimisation

Trafford Council Maintenance budgets are derived from three sources:

- Revenue funding provided by Trafford Council (devolved from the Revenue Support Grant provided by the government). It is largely based on the previous years allocation plus an allowance for inflation.
- Annual Capital Maintenance Allocation (supported borrowing) provided by the DfT
- Capital – from the Council's own resources

The distribution of the budget is based on:

- Current condition (service level) of each class of carriageway or footway and the current condition of the street lighting.
- Predicted levels of deterioration
- Desired condition (service level) of each class or carriageway of footway/and the street lighting and number of street lighting columns replaced.
- Improvement km required to 'bridge' the performance gaps between current and desired Service Levels (refer to 'Performance Gaps)
- Scheme types and associated costs
- Public perception of priorities
- Statutory obligations to maintain a safe highway
- Option most appropriate to deliver maximum use of resources and account of all the above.

Reactive maintenance is expensive compared to planned maintenance. However, it is inevitable that some reactive maintenance will be required.

9 Risks

Trafford Council has a duty under Section 41 of the Highways act 1980 as the local highway authority to ensure that all maintainable roads and footways are maintained in a safe condition having regard to the amount and nature of traffic using them.

There is not a duty to provide street lighting but there is a duty to maintain once it has been provided

10 Forward Works Programme

Street lighting works are programmed over current and future years with reference to the following:

- Anticipated funding
- Corporate and Service objectives
- Statutory obligations to maintain a safe highway
- Targets set for levels of service
- Current condition data
- Performance gaps between current and planned levels of service
- Scheme types/treatment costs
- Engineering assessment of need
- Public perception of priorities

A three year programme has been produced. However, this will need to be updated and revised on an annual basis as:

- New survey data
- Refined survey data
- Changes in budget
- Changes in current and desired service levels
- Changes in public perception of priority

11 Works Delivery

We are currently seeking new procurement framework/partnering agreements, possibly jointly with Stockport Council.

12 Performance Measurement

BVPI 215a Days to replace a street light (Council)
BVPI 215b Days to replace a street light (DNO)
BVPI 53/1 Average cost to repair a street light
BVPI 53/2 Percentage of street lights not working as planned

Performance against target is monitored and formally reported monthly and in a more detailed manner at 'KPI Away Days' which the senior management team attend Improvement actions from the 'Away Days' are reflected in amendments made to the Performance Management System and are then monitored by the Senior Manager on a fortnightly basis

13 Improvement Actions

A number of improvement actionshave been identified to allow for better lifecycle planning·

Inventory data

Generally the inventory dates for street lights in good additional information is required on signs and bollards including condition details.

Condition/Demand/Performance Gaps/Performance Monitoring

- Introduce energy saving measures such as white light
- Allow for CMS (Computerised Management Systems) for new stock
- Carry out holistic approach on schemes with planned structural maintenance ensuring columns are replaced when scheme carried out is less than 3 years life left in the columns

Update Maintenance History on UKPMS

Updating inventory information to the asset, such as surface/construction type, will assist with·

- Analysing condition data
- Determining rate of network deterioration
- Durability and effectiveness of material types
- Long cycle planning
- Identifying maximum use of resources

Long term strategy

Review the current strategy for improving/maintaining street lights' condition that is linked to long term improvements of the network, performance of materials and their lifecycles, value for money and identifying long term targets to aim for (that are linked to customer perception and priority). Assess all the options that are available including time related options utilising a lifecycle costing approach.

Produce a long term maintenance programme (ideally 10 years).

Maintenance audits

Introduce a maintenance audit for all proposed developments, new roads and other changes to the network to assess future maintenance costs of proposals and to help prepare the case for developer contribution to pay for the longer term cost of their development on the network.

14 Life Cycle (whole life costing model)

Life cycle, whole life costing modelling is not appropriate for street lighting

The only intervention used to prolong the life of the columns is painting

Painting occurs every 10 years i.e. 4 times in the life of the column and is designed to extend the life of the column from the manufacturer's recommended period of 25 years to 40 years

Deterioration over the life of the column is assumed to be linear

MAINTENANCE PLAN FOR HIGHWAYS AND STRUCTURES

MAINTENANCE PLAN FOR HIGHWAY STRUCTURES

1 Objectives, Policies and Goals

The following can contribute to the strategic objectives of the Council:-

- Lowering Council Tax and Value for Money
- Better roads and pavements

Objectives set specifically by the Council for its highway structures section are:

- Safety
- Fitness for purpose
- Maintaining a steady state of bridge stock

Highway structures should be maintained/reconstructed in a manner that preserves existing aesthetic and historical qualities, in keeping with their environments and functional.

- Value for money

  They should be maintained to a standard that incorporates economic use of materials, designs and procurement methods.

These objectives are pursued through the following policies:

- A programme of regular inspections
- Where possible co-ordinate works on bridges, with other highway works
- Consider environment impact of all works
- Consult interested parties (Planners, Environment Agency, etc). about the bridge programme
- Undertake a balanced programme between maintaining, strengthening, refurbishing, upgrading and replacing highway structures.

To help to manage its highway structures, the Council adopts the following:

- Asset management and performance analysis through the use of quality indicators, whole life costing and resource accounting.
- Evaluate existing practices against the new Code of Practice for the Management of Highway Structures.
- Sustainability in consideration of future works

Ultimately the Council wishes to achieve the following goals:

- To have full load capacity, except where not possible because of historical, environmental, functional and operational reasons.
- To meet all current safety standards, except where not possible because of historical, environmental and operational reasons.
- The maintenance programme to be proactive.
- To be in a good condition.
- To be managed in accordance with the Code of Practice.

The timescales are dependant on funding. It is hoped that asset management will enable sufficient funding to be available for the above to be achieved.

2 Inventory

The Council monitors three hundred and seventy structures as shown in Table 1:

Route Classification	Highway Structures					
	Road Bridges (RB)	Subways (S)	Foot Bridges (FB)	Culverts (C)	Retaining Walls	Sign Gantries
Strategic Non Trunk Route	Primary 28	5	-	2	3	-
Regional Primary Route	A 19	-	-	4	1	3
Principal County/Urban Distributor	B 54	3	1	7	7	-
Secondary Distributor	C 23	-	1	11	2	-
Local	U 10	-	1	5	-	-
Rural Footpaths	2	-	71	7	-	-
Others	19	1	2	2	-	-
Totals	155	9	78	39	13	3

Table 1 – Number of Highway Structures

Highway structures owned and maintained by other organisations either over, under or adjacent to borough highways are shown in Table 2:

Organisation	Totals
MSCC/Bridgewater Canal/Peel Holdings	24
GMPTE/Metrolink	19
Network Rail	39
British Rail Property Board	11
Others	59
Totals	152

Table 2 – Structures affecting the Highway owned by other organisations

3 Asset Valuation

The method for the valuation of the stock of highway structures is the estimated, gross replacement cost, as agreed in the GMADE group

The replacement cost is in excess of one hundred and fifty million pounds.

4 Condition

The Council monitors the condition of its highway structures through a programme of inspections.

The condition each highway structure is evaluated in accordance with the method developed by WS Atkins Consultants Ltd on behalf of the CSSBG resulting in a score for each structure. Values are related to these scores.

The Council has completed a full evaluation of condition and this shows that whilst the stock of structures is currently in a good condition some have critical elements that are in a poor condition.

The cost of bringing the stock of highway structures up to a very good condition, thus allowing the current maintenance regime to move from reactive to proactive, has been estimated to be over three million pounds.

The detailed inspections include limited programmes of testing to determine the severity and extent of defects or damage, the causes, current levels and rates of deterioration.

The Council also undertakes special inspections. In recent years these have included inspections of post tensioned, cast iron and severely deteriorated structures and river bridges affected by scour.

The Council also undertakes a programme of monitoring of weak and deteriorated bridges which await the availability of funding to be strengthened and/or refurbished.

For lifecycle planning it is proposed to follow the inspection regime recommended by the Department for Transport. This is shown in Table 3.

Inspection Type	Recommended Frequency	Current Frequency	Asset Type Covered
General	Every two years.	Every two years.	All structures
Principal	Every six years	Approximately every six years	All structures
Special inspection	As required	As required	All structures
Scour	Approximately every six years	Approximately every six years	Critical river structures

Table 3 – Inspection Regimes

It is proposed to further optimise the inspection regime by reviewing it against the recommendations of the Code of Practice.

5 Demands

There has been significant residential and commercial development in the Borough of Trafford in recent years. This has not been reflected in a programme of new road building and the modernisation of the existing highway network to support this development has lagged behind.

The stock of highways structures in Trafford is ageing with many of the structures having been designed and built when transport demands were considerably less. This is shown in Table 4 below.

Date of Construction	Totals
Pre – 1700	7
1801 – 1900	29
1901 – 1945	28
1946 – 1973	36
1973 – Current	56
Total	156

Table 4 – Age of Structures

Because many highway structures are old, built to satisfy lower traffic demands and designed to much lower standards than currently, there are issues of safety with these bridges as follows:

- Lack of or very inadequate pedestrian facilities
- Low clearances
- Inadequate widths between parapets resulting in single lane bridges
- Lack of protection to railways/canals at over-bridges
- Lower load capacity
- Weak parapets and piers unable to sustain adequate vehicular impacts

The outcomes of programmes reviewing some of the above deficiencies are shown in Table 5.

Programme	Number of bridges reviewed	Number of bridges failing	Notes
Load Assessment Programme	37	0	Standard BD21 – Number not able to carry full highway loading
Parapet Assessment Programme			Standard BD52 – Number not able to withstand vehicular impact loadings to current standards
Road/Rail Interface Assessment Programme			Durham Model – Number of bridges scoring more than 90 (high risk location)

Table 5 – Assessment Programmes

The general inadequacies of vehicular containment could lead to serious incidents and major disruption to the highway network.

Currently there is a long term requirement to upgrade all highway bridges to 40 tonnes, where appropriate. The majority of Trafford's bridges meet this requirement.

The EC Directive 85/337/EEC 'The assessment of the effects of certain public and private projects on the environment' initiated from 1988 'a formal approach to environment assessment'

The Planning (Listed Building and Conservation Area) Act 1990 requires each local authority to list buildings (including highway structures) of special interest, either historic or architectural Any work to one of these structures requires consent from English Heritage which not only covers the proposed alterations but techniques of repair and choice of materials. The Act provides for the protection of conservation areas that have special historical interest and this can influence the manner in which work to a structure located in such an area is carried out.

There are additional design and construction requirements for highway structures located in Sites of Special Scientific Interest.

The Disability Discrimination Act (DDA) 1995 influences the design of structures requiring the provision of features that do not discriminate against the disabled.

Programmes to reduce the incidences of graffiti using professional artists and young offenders to design and paint wall murals on vulnerable structures are under constant review and are co-ordinated with the bridge maintenance programme.

6 Performance

The shortfall in performance of the Council's stock of highway structures discussed above can be summarised as follows:

- Inadequate load capacities
- Inadequate geometrics

  Carriageway widths
- Inadequate safety provisions

  Weak parapets

  Limited or no facilities for pedestrians – no data is currently held.
- Inadequate provision for hydraulics

  Undermining of foundations by scour – This is an ongoing problem that changes year on year depending on the weather.
- Deteriorating condition

  The Council has not set performance targets in the past because of the absence of statutory requirements and non-availability of suitable indicators.

7 Option identification

The Council identifies options for work as follows:

- Essential Maintenance

  A priority system is employed in deciding the order of work. This considers the recommended work against the current values of the bridge condition indicators, the likelihood of future deterioration based on previous experience and the importance of the structure to the highway network.

- Safety improvements

  The Council does not have a separate programme for safety improvements to its highway structures but does incorporate such improvements in larger schemes, such as the upgrading of parapets to withstand vehicular impact and safety barriers on approaches to bridges to minimise railway encroachment.

- Layout Improvements

  Whilst no work is separately identified for the purposes of improving clearances and carriageway widths, some reconstructions include an element of improvement of geometrical layout as a result following current design standard as far as practicably possible

- General Comments

  The elements of the bridge programme have up to now been priorities using separate systems with the final selection of schemes being based on the judgements of the engineers employed on the programme. The Council will ultimately use the new indicators to give greater objectivity to the selection of schemes across the whole spectrum of work.

  The combining of work on bridges with other highway network schemes has not been an easy consideration in the development of the programme of works. Although it is desirable for highway structures and highways schemes to be combined to minimise the disruption to the network, the long lead in times, legal, land, planning, plant diversion, and differing priorities have often precluded this. The Council has the co-ordination of all works on the highway as one of its long term goals. It is believed that this will reduce network disruption and costs to the Council of all highway related works.

  The Council recognises that in the past the lack of indicators to identify and prioritise bridge schemes according to the ability of structures to satisfy the needs of the highway network has been a handicap in developing joint highway/bridge schemes.

8 Budget

The highway structures programme budget receives funding from principally two sources, namely revenue from the Council's own resources and capital from Central Government.

Revenue

The revenue funding is used for day to day maintenance, repair of accidental damage and replacement of these together with that for other parts of the service.

As a consequence of the limited revenue funding, the current maintenance is reactive dealing only with emergencies and essential repairs.

Capital

The capital funding is received through annual bids made to the Department for Transport by the Council as part of the Local Transport Plan (7) process and from its own Capital funds.

The Council directs its capital funding on structures across the whole network; this has allowed it, in addition to priority work on the principal network, to replace bridges that have reached the end of their structural life and to strengthen others on routes serving more communities in rural areas.

9 Risk Management

The risks associated with maintaining the condition of the stock of structures in Trafford have been reviewed and a total impact score and likelihood identified. A traffic light system of red, amber or green shows whether the risk requires an action plant to mitigate risk, whether the risk can be tolerated but kept under review or the risk can be tolerated.

Risk – event	Total impact score	Likelihood	Status
Bridge lost through scour	12	2	Amber
Bridge lost through major structural failure	16	2	Green
Bridge loss of service through vehicular impact	13	1	Green
Bridge loss of service through flooding	6	3	Amber
Accident on bridge (consequences of an accident could be influenced by obsolete parapets, defective drainage, worn surfacing, road joint failure, etc.)	7	1	Green
Vehicle leaves the highway and obstructs the railway line	12	2	Amber
Loss of footbridge through bridge strike	12	1	Green
Temporary loss of service of footbridge through bridge strike	6	1	Green
Disruption of highway through bridge strike	6	4	Red
Collapse of cellar and the like under the highway	10	1	Green

Key to likelihood

Likelihood	Risk score	Definitions
Very high	4	Likely to occur each year/>60% chance of occurrence
Quite high	3	Likely to occur every 5 years/Up to 40% chance of occurrence
Quite low	2	Likely to occur every 10 years/Up to 20% chance of occurrence
Very low	1	Likely to occur every 10+ years/Up to 10% chance of occurrence

Key to impact rating

Impact	Risk score	H & S	Service Delivery	Cost	Reputation
Disastrous	4	Fatality/ permanent disability	Significant adverse impact on customers > 1 month duration	Over £1m	Third party intervention Public Interest Report. Regional/national media (long term)
Serious	3	> 20 days absence for > 5 people	Significant adverse impact on customers > 1 day duration	Up to £1m	Managed report to Corporate Management Team Regional media (short term)
Moderate	2	Short term absence for at least 5 people	Significant adverse impact < 1 day duration	£250,000	Managed report to management team. Local media coverage (medium/long term)
Minor	1	Short term absence for < 5 people	Significant adverse impact for customers < ½ day	Up to £100,000	Managed report to business unit. Local media (short term)

The risks identified as having red status have been assessed for ways to mitigate the risk and action plans are shown on the following page.

Group	Highways Maintenance
Risk number	10
Risk description	Disruption of highway through bridge strike
Risk Status before mitigating actions	Red
Risk owner	RDC
Details of mitigating actions to be taken, including timescales.	Monitoring of low clearance bridges (currently done). Monitoring incidents of bridge strikes to establish vulnerable bridges (proposed). Monitoring clearances of vulnerable bridges including liaising with Area Offices about surfacing woks that could affect these clearances (proposed).
Review timescale	**Annually**
Method of review – identify milestones that will be used to monitor the effectiveness of the mitigating actions.	Dependant on initiating the proposed actions. Monitoring the number and locations of incidents to establish whether corrective actions are required.
Risk status at review	
Further action required or risk reassessed	
Details of further actions required	

The Council has the following problems in the management of its stock of highway structures:

- Aging stock
- Increasing demands
- Increasing number of accidents on structures
- Budgets continually failing to match demands

Because of these problems the Council is being faced with large risks, the principal one being that of safety. The other risks are:

- Commercial
- Environmental
- Increasing cost of neglect (transferring costs to future generations)
- Political

These other risks are greatly influenced by how that of safety is managed.

The Council manages its substandard highway structures in accordance with BA 79.

This has resulted in:

- The monitoring of a large number of bridges for both structural and maintenance reasons
- The imposition of weight and width restrictions
- The closure of some bridges

The current situations of the monitoring and weight restriction programmes are shown in Table 8

Number of bridges being monitored	43
Number of bridges with imposed weight restriction	6
Number of bridges for which imposed weight restrictions are being sought	0

Table 8 Monitoring and Weight Restrictions

These measures are considered essential to safeguard the public

The consequences of restrictions and closures are:

- Disruption to the travelling public
- Disruption to emergency services
- Economic loss to local businesses
- Increased safety risks elsewhere on the network created by the diversion of heavy traffic onto unsuitable routes
- Increased environmental damage created by the use of diversion routes
- Increased damage of highways used for diversion routes

The public at large generally do not understand the issues surrounding the management of highway structures and consequently any restriction affecting their everyday life is perceived to be as a result of mismanagement by the local authority. This has political risks to the elected members of the Council if they are seen to be accepting the need to impose restrictions on the use of the highway.

10 Forward Works Programme

The forward capital works programme is developed by identifying priorities using separate systems for each element of the programme and then combining these through judgement and experience in the programme. The elements of the prioritisation are load capacity, condition and safety.

The importance of the bridge to the network is the overriding factor. Where bridges on minor roads have reached the end of their life, which is normally a combination of poor condition, inadequate load capacity and no alternative routes, are included in the bridge programme. Safety is normally considered only on important roads and at road/rail interfaces.

Some combined planning with other areas of service for a programme to develop the local highway network has taken place but this as a definite capital programme has still to reach fruition.

The revenue works programme is developed using a priority system considering bridge condition indicators, the likelihood of future deterioration and the importance of structures to the highway network.

11 Works Delivery

The Council currently procures its works to highway structures as follows.

All works are offered on a scheme by scheme basis from contractors selected by competitive tenders.

12 Improvement Plan

The Council plan for improvement in the management of its stock of highway structures is centred on the implementation of the recommendations of the new code and Trafford's corporate priorities.

The Council would like to introduce:

- Indicators
- Lifecycle planning
- Asset valuation
- Performance management

Bridge Condition indicators have been introduced and those of availability, reliability and work bank are being reviewed.

Analysis of the costs of recent schemes will be undertaken in 2008 to provide the basis for estimating gross replacement costs, required also for asset valuation.

Full set of bridge indicators are expected to be in place by the end of 2008 and this will allow performance targets to be set during 2009.

The enhanced BMS will have full sets of data for:

- Highway management
- Bridge management
- Programme management
- Performance management
- Financial management
- Health and safety management

Following a major review of the procurement of its highway structures works, the Council hopes to soon introduce new contracts maintenance, to bring cost savings and better value.

The Council supports regional and national bridge groups and peruses even greater regional and national involvement to bring efficiencies in the development of lifecycle planning, improvement in the training of staff and allowing (through the auditing of inspection results) more meaningful comparison of services provided by different authorities.

The Council believes that the introduction of asset management to its stock of highway structures will provide a better understanding of the issues around bridge management that will lead not only to increased funding but more focussed spending that ultimately will lead to greater cost effectiveness in the maintenance of its stock of highway structures.

Trafford Council

Sheet No ____ of ____

Structure Name: ____ **Structure No:** ____

Structure Type Code: ____ **Owned By:** TC

Span ____ **of** ____ **Date Inspected:** 2008

Under/Over/Alongside –Road/ Rail/ River etc* ____
*Delete as appropriate

Type of Inspection Principal ✓ General ____ Superficial ____ **Inspected by:** ____

Grid Ref: ____

Set	No	Element Description		S	Ex	Def	W	P	Cost	Comments/Remarks
Deck Elements	1	Primary deck element (Table 2)								
	2	Secondary deck elements	Transverse beams							
	3		Element from Table 3							
	4	Half joints								
	5	Tie beam/rod								
	6	Parapet beam or cantilever								
	7	Deck bracing								
Load-bearing Substructures	8	Foundations								
	9	Abutments (incl. Arch springing)								
	10	Spandrel wall/head wall								
	11	Pier/column								
	12	Cross head/capping beam								
	13	Bearings								
	14	Bearing plinth/shelf								
Durability Elements	15	Superstructure drainage								
	16	Substructure drainage								
	17	Water proofing								
	18	Movement/expansion joints								
	19	Painting: deck elements								
	20	Painting: substructure elements								
	21	Painting: parapets/safety barriers								
Safety Elements	22	Access/walkways/gantries								
	23	Handrail/parapets/safety barriers								
	24	Carriageway surfacing								
	25	Footway/verge/footbridge surfacing								
Other Bridge Elements	26	Invert/river bed								
	27	Aprons								
	28	Fenders/cutwaters/collision protect.								
	29	River training works								
	30	Revetment/batter paving								
	31	Wing walls								
	32	Retaining walls								
	33	Embankments								
	34	Machinery								
Ancillary Elements	35	Approach rails/barriers/walls								
	36	Signs								
	37	Lighting								
	38	Services								
	39									
	40									
	41									
	42									

INSPECTOR'S/ENGINEER'S COMMENTS

Name:_____ Signed:_____ Date:_____

Name:_____ Signed:_____ Date:_____

WORK REQUIRED

Ref No	*Suggested Remedial Work*	*Priority*	*Est Cost*	*Action Date*

Name:_____ Signed:_____ Date:_____

MAINTENANCE PLAN FOR TRAFFIC CONTROL INFORMATION SYSTEMS

Information to be provided in upgraded document

MAINTENANCE PLAN FOR TREES, VERGES AND HEDGES

Information to be provided in upgraded document

MAINTENANCE PLAN FOR VEHICLE RESTRAINTS (SAFETY FENCES)

Information to be provided in upgraded document

See enclosed document entitled 'Highway Services – Lot 2a – Appendix 2 – Highways Policies – Street Lighting Policy (DRAFT)'

DATED: 09 September 2014

CONTRACT(S) FOR THE PROVISION OF ENVIRONMENTAL & INFRASTRUCTURE SERVICES

Document Reference:

015_Lot2b_Street Lighting Preventative, Cyclic & Reactive Works Procedure

DRAFT

TRAFFORD COUNCIL

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Trafford Town Hall
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TRAFFORD COUNCIL

DRAFT

HIGHWAYS SERVICE

Street Lighting Preventative, Cyclic and Reactive Maintenance Works Procedure

Revision Date 10th April 2014

CONTENTS

1.0 INTRODUCTION:

1.1 The main purpose of street lighting is to allow:-

- The safe and convenient movement of people, traffic and goods.
- Reduce the fear of crime

1.2 Although there is no statutory duty on a highway authority to provide street lighting, responsibility for the installation and operation of street lighting systems on the highway was passed to Local Authorities via the Local Government Act 1966. Although Trafford Council does not have a duty to provide lighting, it has a duty of care to maintain its lighting stock in a safe condition and to ensure that the equipment is fit for purpose.

The Authority has legal obligations to maintain the electrical infrastructure in accordance with The Electricity at Work Regulations 1989 and the Health and Safety at Work Act 1974.

A system for recording underground electrical apparatus as required by the New Road and Street Works Act 1991 and the Electricity Safety, Quality and Continuity Regulations 2002 is to be developed within the asset inventory.

1.3 This Statement of Operational Policies and Standards of Trafford Council adopts the policies, procedures and standards outlined in the document "Well-lit Highways; Code of Practice for Highway Lighting Management" November 2004 (updated August 2013) as produced by the UK Lighting Board.

Review of the Document

This document is subject to regular review in accordance with the Council's commitment to a process of continuous improvement.

Service Objectives

The street lighting service provides highway lighting with the aim of providing a safe and secure environment.

1.4 'Maintenance' is divided into the following sub activities:-

(a) Planned Maintenance
(b) Preventative Maintenance
(c) Cyclical Maintenance, Safety Inspections and Bulk Lamp Replacements
(d) Reactive Maintenance

Planned Maintenance is addressed in the "Street Lighting Planned Maintenance Works Policy Document"

Preventative Maintenance which deals with activities designed to prolong the life of the asset

Cyclical maintenance deals with bulk lamp replacements, cleaning and safety inspections and structural testing

Reactive Maintenance deals with the repair of street lighting columns, the identification and rectification of faulty illuminated street furniture, and RTCs (Road Traffic Collisions)

2.0 RESOURCES AND BUDGETS:

2 1 Budgets are required to:-

(a) Inspect for outages/faulty equipment
(b) Maintaining BVPI's
(c) RTC replacement of columns where recharge is not possible
(d) Energy declaration
(e) Maintaining the asset inventory
(f) Repair faults and outages
(g) Bulk clean and change
(h) Preventative maintenance – painting of columns (currently suspended)
(j) One off replacement of dangerous columns
(k) Electrical safety inspections

3.0 INSPECTION AND SURVEYS:

3 1 Reactive maintenance deals with the identification and rectification of faulty illuminated street furniture

Night time safety inspections are carried out on a 28 day all year round cycle basis on Principal and Classified 'A' roads to identify outages and other defects on the lighting network

The results of these inspections are recorded and relayed back to the Council on the next day for repair using the SAP works management system.

No night time inspections are carried out on Classified 'B' and 'C' roads and urban unclassified roads – faults are identified by requests for service from the public, other partners and Associations.

3 2 Electrical Inspections

All the components of the column and luminaire are visually checked for signs of wear and tear and possible premature equipment failure

Column door mechanisms are greased and bracket and luminaire fixing screws are checked for their correct tension and where required are greased accordingly The electrical circuitry and components are visually checked for their integrity and safety and faulty equipment or items rectified

An electrical test and inspection of every street lighting column within the Borough is carried out within the six years recommended in the BS 7671 'Requirements for Electrical Installations – Highway Power Supplies and Street Furniture' and is carried out by electrical contractors subject to competitive tendering.

This test is carried out in a pre-determined time and route sequence and the frequency of the test and inspect (being six yearly) leads to over 16% of the Borough's street lighting stock being tested annually.

A test and inspection is carried out on all the electrical components and wiring at each street lighting column and all associated outgoing looped cables supplying other street furniture, and a report is provided showing the results of the tests carried out on every item of street furniture.

As a result of this test and inspection, any faults or sub standard result identified in the process of testing, which can be attended to at the time of the visit, will generate remedial action in an attempt to clear the fault or sub standard test results, and a report produced for further consideration This can be in the 'Periodic Inspection Report for Electrical Installation' form within BS 7671, or a similar format form.

Any faults identified in the test and inspections which are considered dangerous will generate urgent remedial action to make the equipment safe to remove any potential danger to members of the public or operatives working on the equipment, and a report of the remedial action taken produced for the client ordering the work

Test results that are sub standard, but are *not* considered dangerous, and cannot be cleared at the time of the test and inspect visit, shall generate a report indicating the nature of the sub standard test results for the information of the client ordering the work indicating that further remedial work is required.

4.0 REACTIVE MAINTENANCE PROCEDURES AND TARGETS:

4.1 Electricity Supply Failures Can Result from Defects Within:-

(a) Electricity Company Networks

When the electricity company (Distribution Network Operator's) supply fails the Street Lighting section will raise an official order to the Distribution Network Operator for repair.

These faults are repaired by the Distribution Network Operator at no cost to the Council. The use of these supplies is of benefit to the Council so whenever new/replacement installations are commissioned Distribution Network Operators supplies are utilised wherever possible.

(b) Private Cable Networks

The minority of the Council's street lighting assets are currently inter-connected through the Council's own private cable network, which is fed from mains electricity supply provided by the Distribution Network Operator. It is the Council's responsibility to repair faults arising on this private cable network.

The Council operates a 24-hour emergency attendance service to respond to all dangerous occurrences including electrical equipment on the adopted highway which are highway assets. The Council will replace all items of illuminated street furniture severely damaged by road traffic collisions and vandalism and seek to recover the cost from the responsible party.

4.2 **Road Traffic Collisions (RTCs)**

Street lighting columns involved in road traffic collisions, which require removal and complete replacement, shall generally be replaced with standard equipment, unless, for instance in conservation areas, there is specific aesthetic or period style equipment which may require special consideration.

The current works procedure in Trafford is to install standard street lighting equipment throughout the Borough. This will result in LED luminaire replacements (residential areas) and like for like luminaire replacements (general traffic network) to be fitted to a knock down replacement. LED luminaire replacements cannot currently be fitted to knock downs on the general trafficked network because it would result in a redesign. It is also standard works procedure that in residential areas a

knocked down 5 0 metre mounting height column would be replaced with a 6.0 metre mounting column (typically the standard mounting height currently used on residential roads in Trafford)

The BS EN 13201 (British Standard) 'Code of Practice for the design of road lighting' recommends that street lighting columns should be set back from the kerb edge of a highway, a minimum dimension of 0 8 metre on roads with a 30 mile per hour speed restriction, and 1 5 metre minimum setback for roads with a 60 mile per hour speed restriction.

The BS recommends, where possible, the adoption of a minimum setback of 1 5 metre for street lighting columns from kerb edge, on all roads, to attempt to minimise the danger that can result from motorists colliding with street lighting columns in RTCs

It is therefore prudent that columns which are knocked down in RTCs and which were originally sited towards the front of footpath should be replaced towards the rear of the footpath but this setback should be limited to footpaths which are up to a maximum width of 3 0 metres Careful attention should be given to providing enough room for prams or wheelchairs to pass lighting columns newly sited on footpaths.

It may be the original column involved in an RTC was sited to the front of a tree lined road or avenue, this may have been originally necessary to allow the illumination to be projected onto the adjacent carriageway and that realistically any replacement lighting columns would require siting in the same position with relation to the trees, as original

There may be circumstances when positioning the replacement lighting column to the rear of an existing footpath is also inconvenient to householders or business premises as they can be used as climbing accessories which can be a nuisance or an aid to vandalism or indeed can be used to illegally gain access to these properties Therefore the siting of a replacement column in this situation should not involve repositioning to the rear of the footpath

4 3 **Current Service Standards (Subject to Review)**

PERFORMANCE INDICATOR	STANDARD
BVPI 215a average response time to complete a street lighting repair	3 64 days
L53/2 percentage of street lights not working at any one time	0 80%

BVPI 215b average response time for a DNO (Distribution Network Operator) to repair loss of supplies and defective fuse units	28 days

5.0 CYCLICAL MAINTENANCE FREQUENCY:

5.1 Luminaires

Currently all street lighting column mounted luminaires within Trafford have their lamps 'bulk clean and changed' in accordance with the table overleaf in which the lamp is replaced, and the optics and glazing of the luminaire cleaned at a pre-determined time and in a pre-determined route sequence with a 50% of the Borough's street lighting stock maintained annually.

The lamp is dated to allow for claims against the lamp manufacturer in the event of premature lamp failure i.e. lamp fails before expiry of guarantee period provided by the manufacturers.

This is in line with the recommendations in the Institution of Lighting Professionals Technical Report Guidance Notes and 'Well-lit Highways; Code of Practice for Highway Lighting Management' produced by the UK Lighting Board.

Cyclic Maintenance Safety Inspections and Bulk Lamp Replacement Regimes	
Bulk lamp replacement lighting columns including safety inspections	SOX 2 years COSMO 4 years SONT 3 years
Interim safety inspections	2 years
Electrical test and inspection	6 years
Illuminated bollards safety inspections and cleaning	1 year
Illuminated subways and underpasses Bulk lamp replacement	1 year
Illuminated traffic signs	Currently burn to extinction
Painting of columns	10 years (currently suspended)
High mast lighting safety inspections	1 year (minor)

	4 year (major)

6.0 ASSET INVENTORY:

Trafford Council uses a 'SAP' system integrated highway maintenance and management database that covers all aspects of the street lighting service The 'SAP' system is used to.-

- Log and manage telephone calls, letters and faxes via a CRM (customer relationship management) through Access Trafford and the Council's own web site
- Maintain defect and historical information
- Create works orders and manage budget/cost information
- Manage the street lighting network
- Maintain street lighting asset and inventory information
- Assist with the production of national and local performance indicators for street lighting
- Schedule and manage street lighting cyclical maintenance works
- Manage street lighting energy consumption and amend usage accordingly

Areas for Development

- Risk management
- Whole life costing
- Cable network information
- Real time data collection on remedial works
- Planned programme of lighting replacements

Energy Details

Energy is supplied via a competitively won contract Both this tender process and a continuing research into more energy efficient equipment ensure best value in terms of energy consumption. It is also policy to consider the potential provision of both green and renewable energy for street lighting and illuminated signs within the Borough.

The current energy supply contract provides for 100% "green" energy Although dependent upon the type of energy supplied the climate change levy per KWh coupled with a small annual growth in the number of units results in increased energy costs over time.

7.0 ASSOCIATED POLICIES:

(1) Street Lighting Planned Maintenance Works Procedure

8.0 SUMMARY OF KEY POLICIES:

- The Council operates a 24 hour emergency attendance service to respond to all dangerous occurrences including electrical equipment on the highway which are highway assets.

- Night time inspections are carried out only on principal and classified 'A' roads on a 28 day cycle.

  No inspections are carried out on classified B and C roads and urban unclassified roads.

- Electrical inspections are carried out at a minimum of every 6 years.

- As part of the preventative maintenance programme columns were painted every 10 years (currently suspended)

- RTC's (Road Traffic Collisions).

Where replacement columns are required, they will be replaced with standard equipment. This may be different from the rest of the columns in the road and could be, for example:-

- A different light source
- A 6.0m column rather than a 5.0m column
- Steel column rather than concrete or cast iron
- The location of the column may also change, for example moved from the kerb edge to the back of footway
- Attached signage shall be removed and reinstalled or replaced dependent upon regulations or Traffic Regulation Orders
- Cyclic Maintenance Frequencies

Bulk lamp replacement lighting columns including safety inspection	SOX 2 years COSMO 4 years SONT 3 years
Interim safety inspections	2 years
Electrical test and inspection	6 years
Illuminated bollards safety inspections and cleaning	1 year
Illuminated subways and underpasses Bulk lamp replacement	1 year
Illuminated traffic signs	Currently burn to extinction
Painting of columns	10 years (suspended)
High Mast lighting safety inspections	1 year (minor) 4 year (major)

To Maintain the Local Performance Indicators Current Targets (2013/14) are:

PERFORMANCE INDICATOR	STANDARD
BVPI 215a average response time to complete a street lighting repair	**3.64 days**
L53/2 percentage of street lights not working at any one time	**0.80%**
BVPI 215b average response time for a DNO (Distribution Network Operator) to repair loss of supplies and defective fuse units	**28 days**

Traffic Management Plan for Major Events at Lancashire Cricket Club: Old Trafford Cricket Ground

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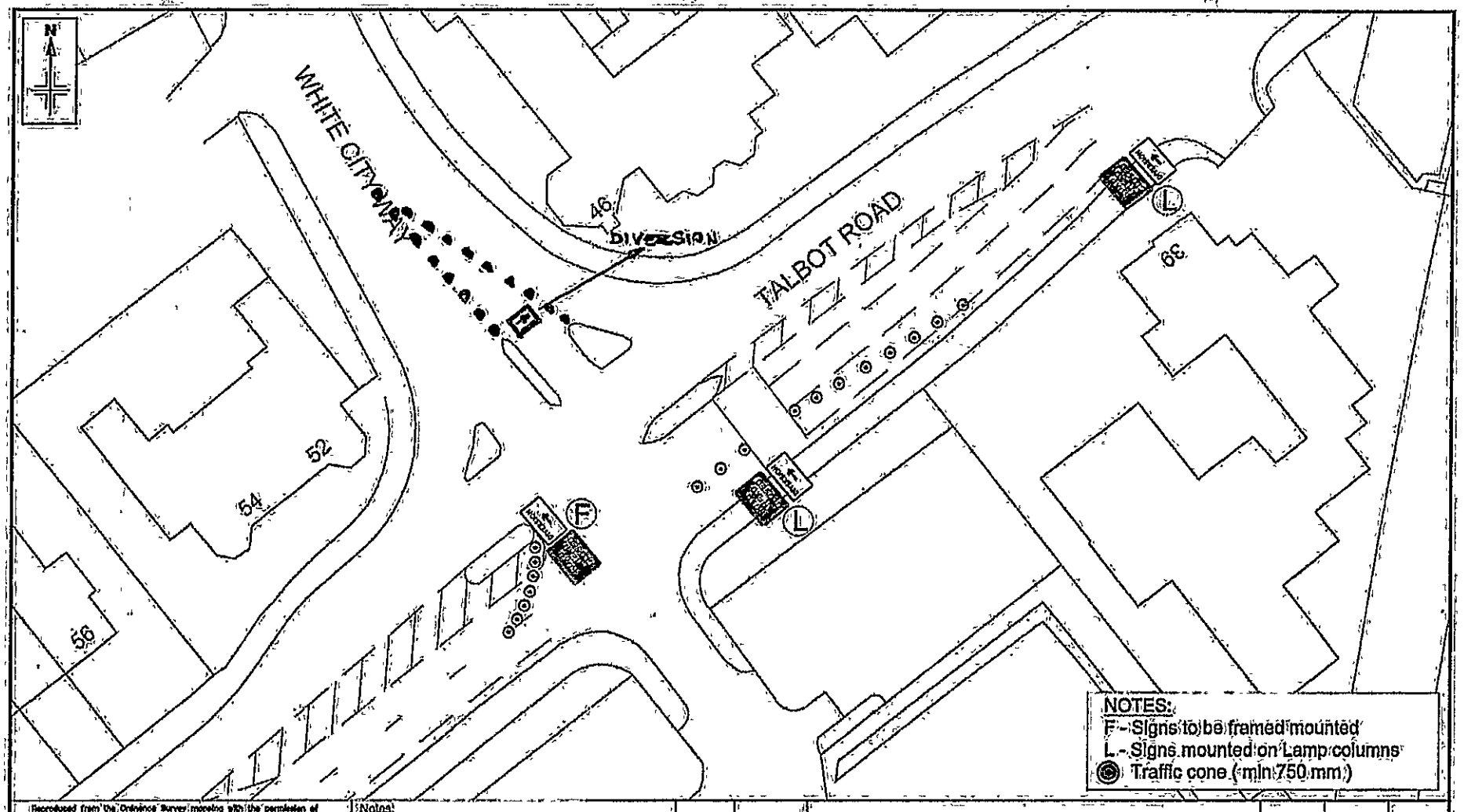
APPENDIX

Illustrative Traffic Management Layouts



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All Dimensions are to be checked on site.

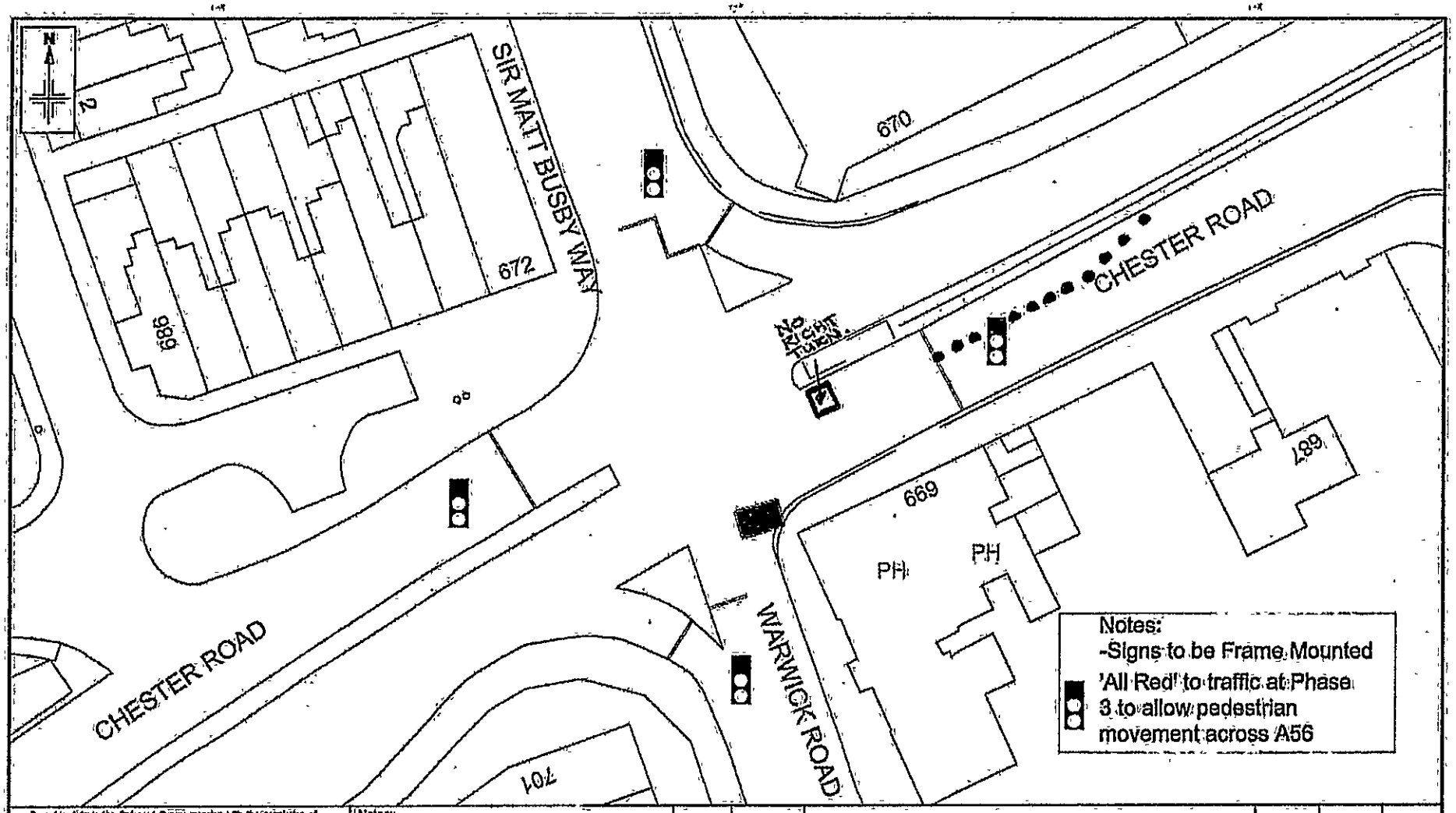
REV.	DATE	REVISION DETAILS	DRAWN	CHECKED	APPROVED

PROJECT & TITLE
LCCC Traffic Management Plan
Talbot Road / White City Way Junction
Signing and Coning Phase 3

TRAFFORD COUNCIL

MG	CHECKED AG	APPROVED
NTS	DRAWING NO. Figure 5	REVISION
Sept 09		

FILE PATH



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PROJECT & TITLE

LCCC Traffic Management Plan
Chester Road / Warwick Road Junction
Signing and Coning - Phase 3

TRAFFORD COUNCIL

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Sept 09			

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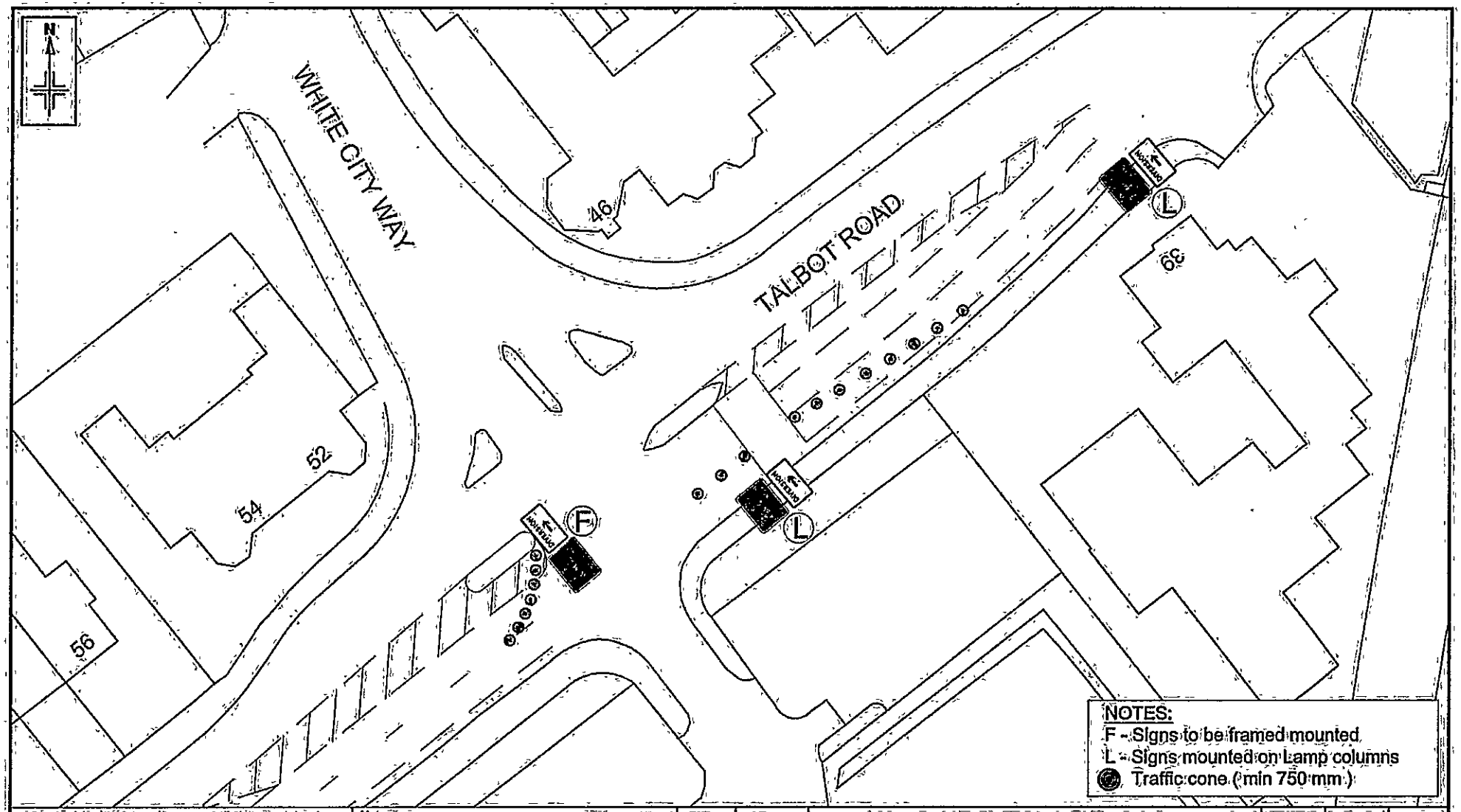

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PROJECT & TITLE

LCCC Traffic Management Plan
Talbot Road / White City Way Junction
Signing and Coning Phase 3

TRAFFORD COUNCIL

MG	CHECKED AG	APPROVED	
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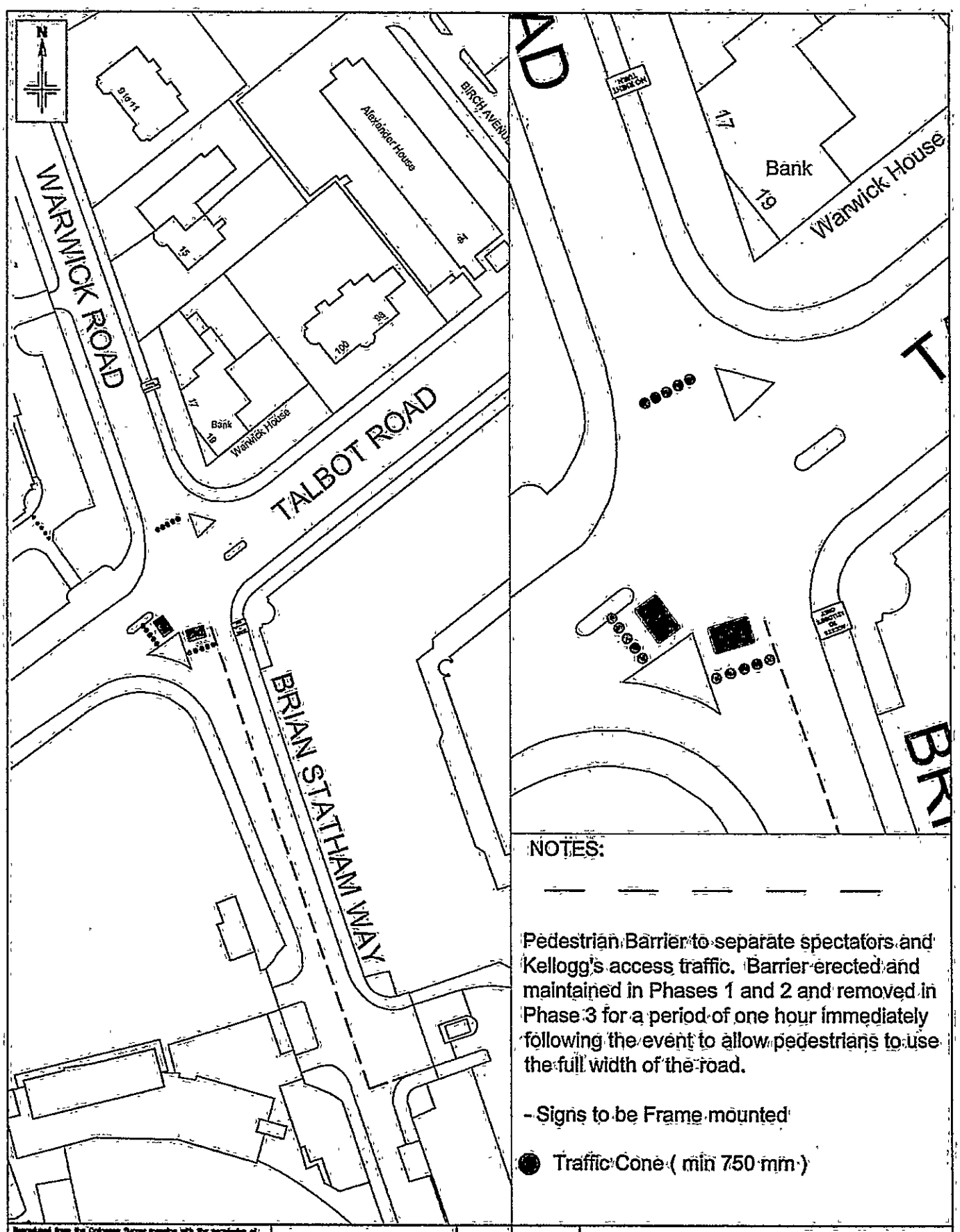

NOTES:

Pedestrian Barrier to separate spectators and Kellogg's access traffic. Barrier erected and maintained in Phases 1 and 2 and removed in Phase 3 for a period of one hour immediately following the event to allow pedestrians to use the full width of the road.

- Signs to be Frame mounted

● Traffic Cone (min 750 mm)

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REV.	DATE	REVISION DETAILS

PROJECT & TITLE
LCCC Traffic Management Plan
Talbot Road / Warwick Rd Junction
Signing and Coning Phase 3

TRAFFORD COUNCIL

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DATE Sept 09	
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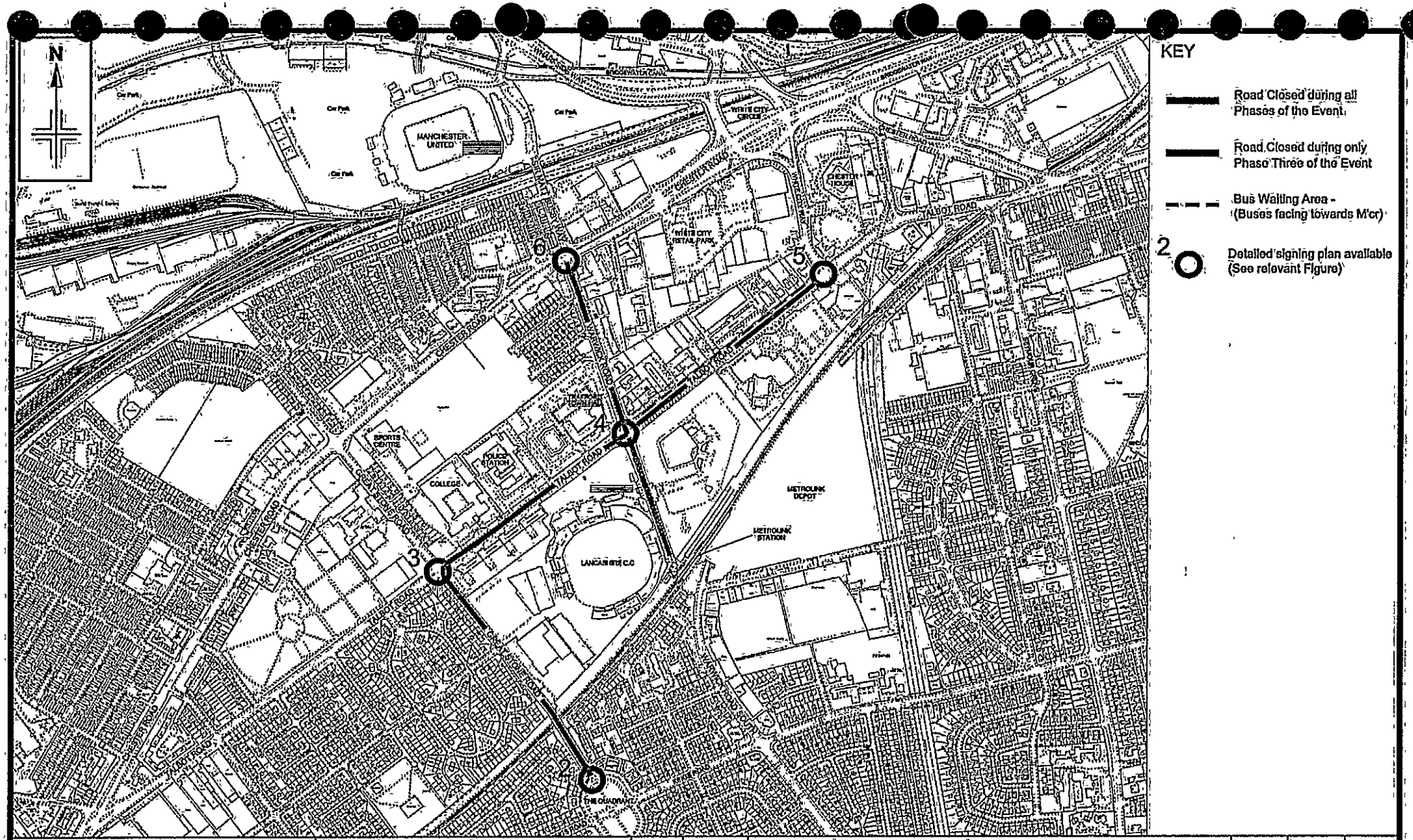

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PROJECT & TITLE:

LCCC Traffic Management Plan
Main Road Closures and Key Signing Locations

TRAFFORD COUNCIL

DRAWN: AJH	CHECKED: GPW	APPROVED: GPW
SCALE: NTS@A3	DRAWING NO.: Figure 1	REVISION: -
DATE: May 2011		

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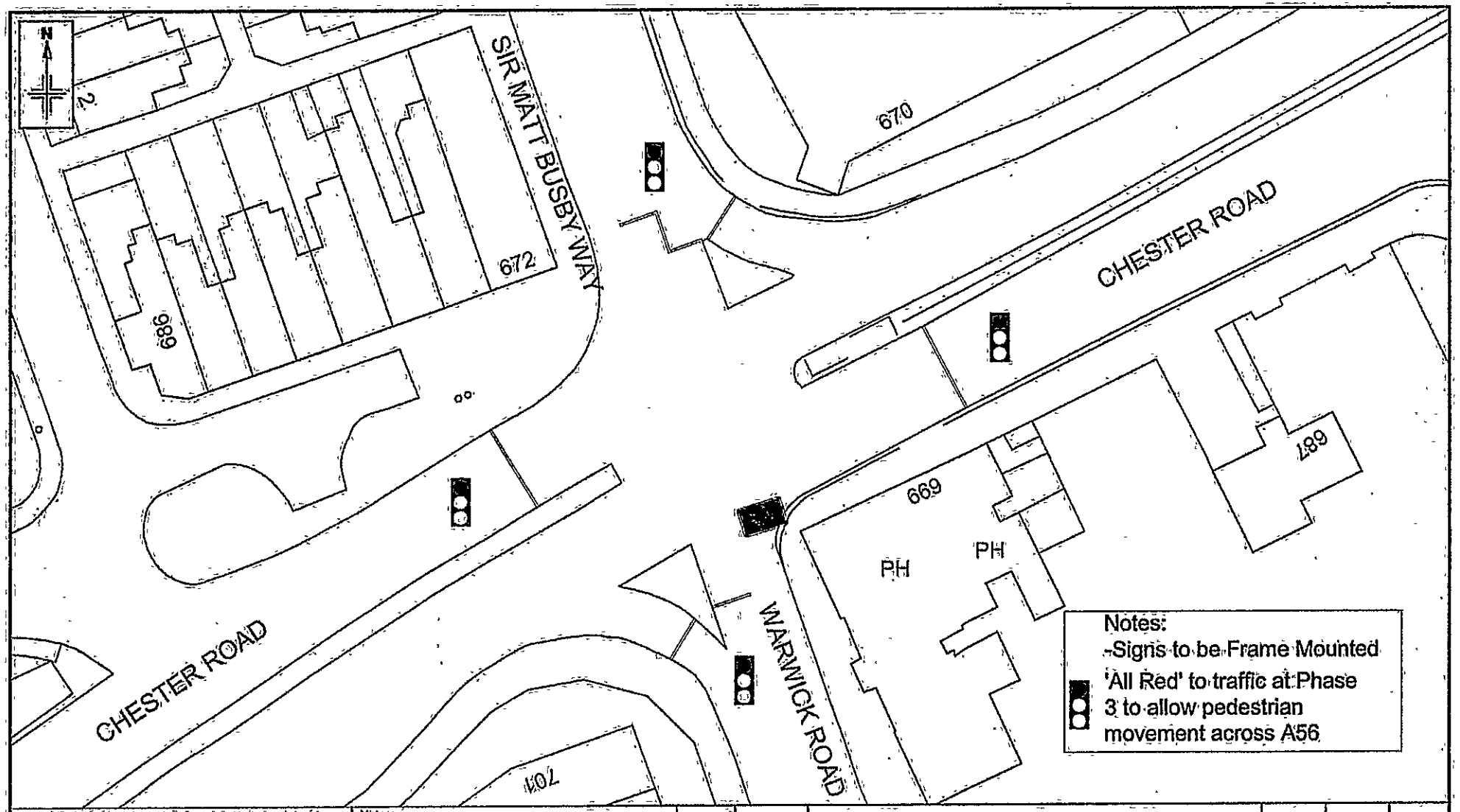

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PROJECT & TITLE

LCCC Traffic Management Plan
Chester Road / Warwick Road Junction
Signing and Coning - Phase 3

TRAFFORD COUNCIL

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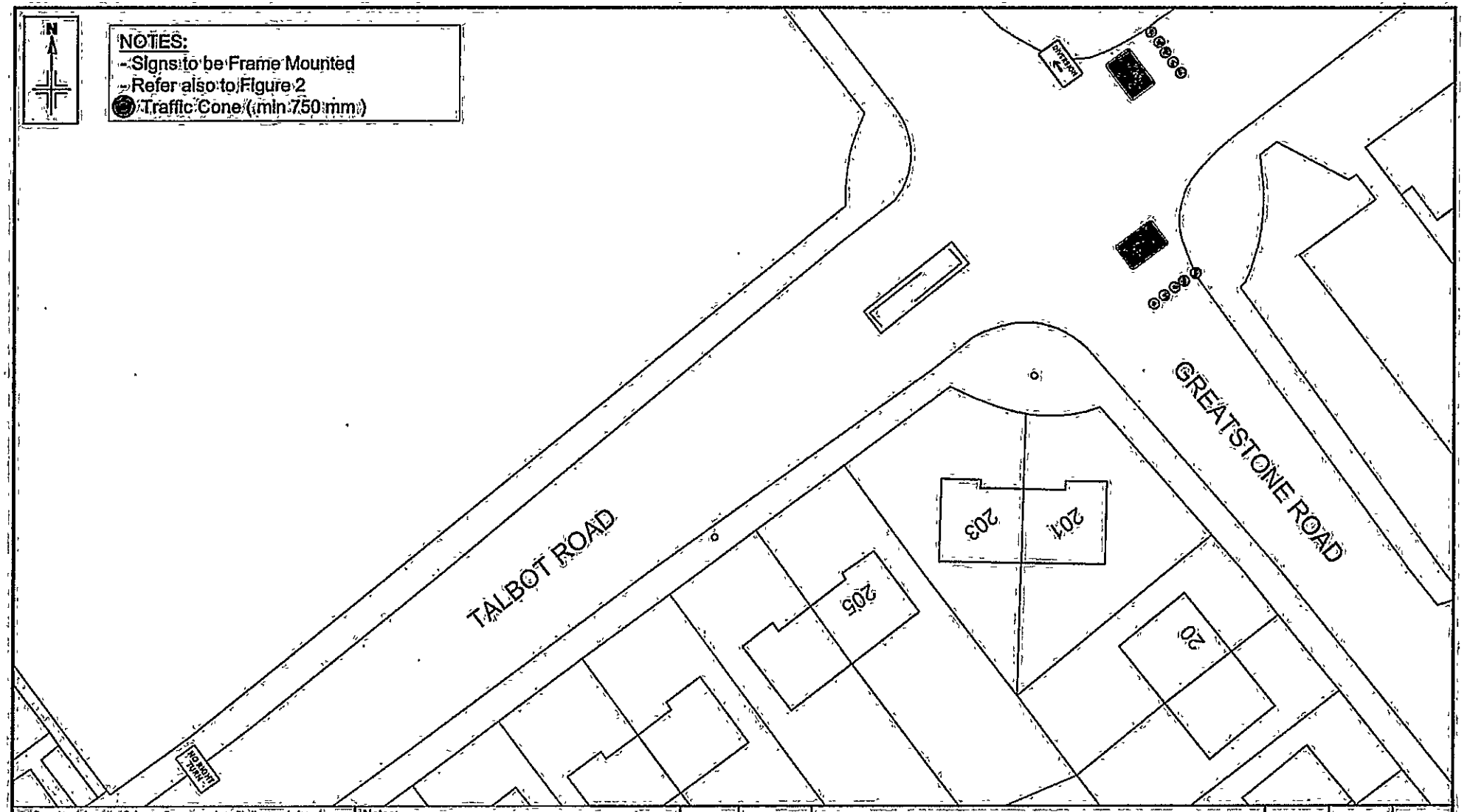

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PROJECT & TITLE

LCCC Traffic Management Plan
Talbot Road / Greatstone Road Junction
Signing and Coning Phase 3

TRAFFORD COUNCIL

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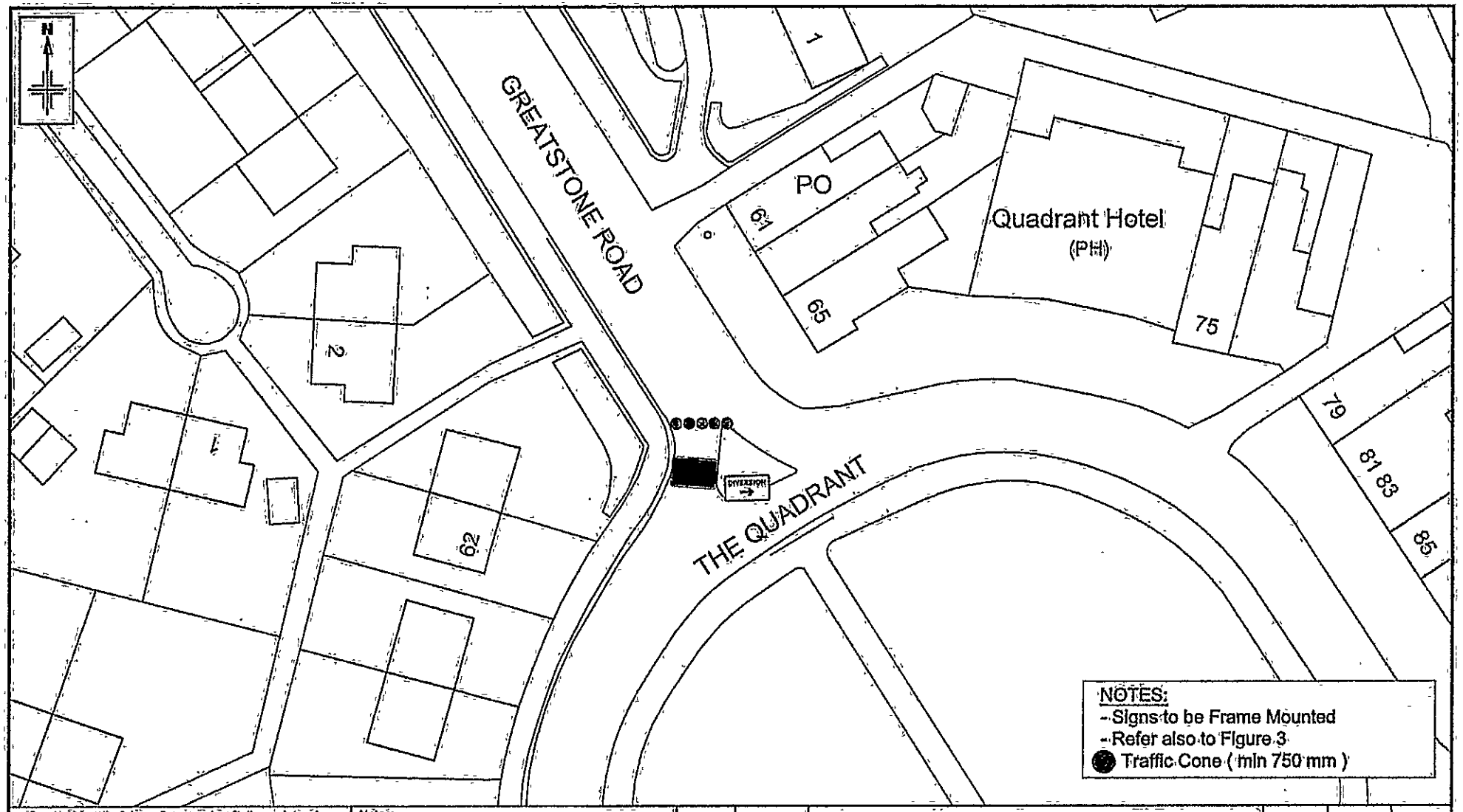

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PROJECT & TITLE

LCCC Traffic Management Plan
Greatstone Road / The Quadrant Junction
Signing and Coning - Phase 3

TRAFFORD COUNCIL

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The Trafford Centre

Traffic Management Plan

1.0 Background

1 1 The Traffic Management Act 2004 imposes a responsibility on Local Traffic Authorities to plan and implement the actions necessary to facilitate, where possible, the free flow of traffic on their road network without adversely affecting the traffic on the networks of neighbouring Authorities Within the Borough of Trafford, Trafford Council, (TC), is the Local Traffic Authority

1 2 This responsibility extends to the management of congestion on the highway network arising from any source

1 3 The Trafford Centre is on the northern side of the M60 motorway between junction 9 and 10. It is bounded by The Parkway (A5081) to the east and Trafford Boulevard (B5214) to the west. Barton Dock Road (B5211) runs along its northern edge

2.0 Organisational Partnership

2 1 The plan has been developed by TC in partnership with the following organisations

- Greater Manchester Police (GMP)
- Greater Manchester Urban Traffic Control Unit (GMUTC)
- Trafford Centre (TTC)
- Highways Agency (HA) including the Regional Control Centre (RCC)

The partners have agreed the contents of the plan.

2 2 TC is responsible for ensuring the development and formulation of the plan and that suitable mechanisms are in place for its delivery TBC are responsible for reviewing the plan periodically and for adjusting it as necessary, in consultation with the partner organisations, to ensure its continuing fitness for purpose

2.3 The partner organisations are responsible for the delivery of specific elements of the plan, as specified below

3.0 The Objectives and Outcome of the Plan

3 1 Trafford Borough Council (TC), as Local Traffic Authority, in discharge of the obligations imposed by the Traffic Management Act 2004 will have in place a 'Traffic Management Plan' for busy times of the year and particularly the Christmas and New Year period at the Trafford Centre

3 2 The main objective of TC, in its role as Local Traffic Authority, is as follows:

To develop and implement a Traffic Management Plan for activities at the Trafford Centre shopping Mall that provides, in partnership with the Police, and

all other stakeholders, a co-ordinated system of traffic management designed to minimise the impact of those activities on other highway users and the community, through the efficient and effective management and control of those travelling to and from the Trafford Centre by whatever mode of travel, and which affords everyone the opportunity, as far as is reasonably practicable, to use the highway network with minimal risk of personal injury and with minimal delay. In doing so; the Local Traffic Authority (TC) will ensure that the Plan is compatible with all other Council Policy themes and objectives and with other complementary operations and plans, principally those of Greater Manchester Police.

3.3 Within this principal objective, TC will take realistic and practical measures to:

1. fulfil the duty placed on the Council by the Traffic Management Act 2004 by:
   a) Ensuring that the likely level of traffic generated by the Trafford Centre is identified and is managed in order to minimise or mitigate, as far as practicable, the impact of this traffic on any users of the highway;
   b) Ensuring, as a result, that vehicular and pedestrian traffic using the local highway network is afforded the opportunity to do so as safely as possible, with the risk of road casualties involving personal injury being minimised;
   c) Ensuring, in addition, that vehicular and pedestrian traffic travelling along the local highway network is afforded the opportunity to proceed as efficiently as reasonably possible so that the risk of undue delay is minimised. GMUTC will provide efficient signal timing plans to help achieve this, where possible;
   d) Working with all partners, including adjoining highway and traffic authorities, the Police, and other stakeholders to achieve a), b) and c).

2. Ensure, where reasonably possible, that emergency service vehicles can make reasonable progress along the highway and can access and egress designated emergency access routes to the Trafford Centre and other premises accessed off the local highway network.

3. Minimise the impact of the traffic generated by the Trafford Centre on local residents.

4. Provide effective and efficient guidance, navigation and control systems.

5. Ensure that the plan lays out the measures required to achieve the most efficient and safe movement of vehicles and pedestrians on the public highways around the site in order to deliver objectives 1 to 4.

6. Ensure that the plan is responsive to changing circumstances.

7. Keep abreast of good practice and to explore and, as appropriate, exploit new technologies that will contribute to the delivery of the objectives of the plan.

4.0 General Traffic Access Arrangements

4 1 The Trafford Centre currently has in the region of 10,000 on-site parking spaces in addition to some off-site spaces in adjacent developments that can be used at peak times,

4 2 Indirect vehicular access to the Centre from the trunk road network is mainly via the M60 using Junctions 9 &10,

4 3 Direct vehicular access to the Centre from the local highway network is from Trafford Boulevard, Park Way and Barton Dock Road,

4 4 Access for cyclists and pedestrians, in addition to (1 2) above can be gained from Moss Lane,

4 5 The following are the major junctions used for access/ egress to the site and their operation:

Junction	Type
M60 Junction 9	Signal controlled roundabout
M60 Junction 10	Signal controlled roundabout
Bridgewater Circle	Signal controlled junction
Ellesmere Circle	Roundabout
Bright Circle	Roundabout
Peel Circle	Roundabout
Barton Dock Road/ Park Way slips	Signal controlled junction
Park Way Access	Free flow slip road
Park Way Egress	Signal controlled junction
Trafford Boulevard Egress	Free flow slip road to M60 S&E
Barton Dock Road Egress	Emergency free flow slip road
Barton Dock Road	Puffin crossing

5.0 General Traffic Conditions

5 1 Large numbers of staff and visitors access the Trafford Centre every day and the Centre is open 364 days a year (closed Christmas Day only) Times of opening vary and for shopping are generally.

Monday - Friday 10am-10pm
Saturday 10am-9pm
Sunday 12noon-6pm
Bank holidays vary and leisure uses often remain open after the shops close.

5 2 Traffic entering and leaving the Centre generally operates satisfactorily within the capacity of the various junctions and there are no major clusters of road casualties on the local road network in the vicinity of the Centre

5 3 Road/ traffic conditions on the adjacent road networks can easily influence traffic operations at the Trafford Centre, particularly the following

- Heavy peak hour traffic on the network (particularly the M60 clockwise carriageway) which can affect the operation of both Junctions 9&10;

- Heavy traffic due to MUFC home games at Old Trafford;
- Vehicle collisions and other incidents on the M60 and/or local roads;
- Traffic signal failure or malfunction.

5.4 Substantially above average visitor numbers to the Trafford Centre regularly occur at school half terms, during the run-up to Christmas, and during the January sales. On many of these occasions the highway network operates satisfactorily, although at the following times the usual junction operations may fail to maintain queues and delays at an acceptable level:

- When one or more of the busy periods above coincide with the road/traffic conditions referred to in (5.3);
- When the traffic flows into or out off (or both together) exceed the capacity of one or more of the junctions referred to in (4.5).

6.0 Planned Regular Measures to Mitigate Traffic Congestion

6.1 [redacted]

6.2 [redacted]

6.3 [redacted]

6.4 [redacted]

6.5 [redacted]

6.6 [redacted]

6.7 [redacted]

Additional Urgent Measures to Mitigate Traffic Congestion

[redacted]

8 0 Monitoring and Review of the Traffic Management Plan

8 1 The partners consider that the traffic management plan satisfactorily addresses the highway safety issues identified from their review of previous activities at the shopping mall. It is recognised, however, that a process of continuous review of the effectiveness of the plan is required in order to ensure that all highway safety issues have been addressed and are adequately mitigated by the measures contained in the plan.

8 2 As a minimum, TC will convene regular traffic management meetings with the partners to discuss matters affecting the movement of traffic in and around the Trafford Centre on the local networks. In addition at least on of these meetings will annual review the effectiveness of the plan and discuss and agree any changes to methodology or mechanism for delivery of intervention measures.

8.3 TC will undertake to collate for presentation to review meetings relevant de-briefing material and information relating to any complaints or comments received relating to traffic management.

8.4 TC will maintain a record of review meetings and an audit trail of any decisions leading to revisions to the plan.

9.0 Contacts:

TC	[redacted]		
GMP	[redacted]		
GMUTC	[redacted]		
TTC	[redacted]		
HA/RCC	[redacted]		

Traffic Management Plan for Major Events at
Manchester United Football Club: Old Trafford Stadium

Pages redacted in full due to confidentiality