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Preston Western Distributor FBC

Economic Impact Report

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Lancashire County Council

Lancashire County Council

Preston Western Distributor FBC

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1. Introduction

1.1 Background and Purpose of Report

The Economic Case for the Preston Western Distributor calculates, using agreed methodologies, the 'standard' economic impacts from building the scheme. These impacts are reported in the Economic assessment report (EAR) and primarily consist of user benefits due to time savings, but also include impacts from changes in the number of accidents, changes in delays during road maintenance, and from the scheme's environmental impacts.

However, research has shown that under certain circumstances, additional benefits can arise as the impact of transport improvements is transmitted into the wider economy. These are termed wider economic impacts. The theory behind these impacts and methodologies to assess them are described in TAG Unit A2.

The Preston Western Distributor scheme is likely to generate some of these wider economic impacts. As such, they will be assessed in line with TAG and will form part of the scheme's overall business case.

This Economic Impact Report describes the theory and valuation behind these wider economic impacts. It should be appended to the Economic Case as supporting evidence. It should be read alongside the Economic Assessment Report, which describes the 'standard' economic impacts of the scheme.

1.2 Structure of the Report

The remainder of this report is structured as follows:

- **Chapters 2 to 4 – Economic Narrative:** these chapters provide context around the local economy, describe and justify why certain wider impacts are expected to occur, and define methodologies for their assessment.
- **Chapters 5 to 8:** these chapters provide detailed methodologies and results for each anticipated wider impact.
- **Chapters 9 and 10:** these chapters describe how the results in this report should be used to support both the economic and strategic cases for the scheme.

2. Economic narrative – Context of Scheme

2.1 Introduction

Improvements to the road network can affect economic growth in a number of ways such as raising productivity, enabling new developments, facilitating trade and supporting employment. The mechanisms by which a given scheme will impact the economy will therefore differ depending on the scheme itself and its local context. As a consequence, the methods by which schemes' impacts on the economy should be appraised need to be determined on a case-by-case basis.

This Economic Narrative for the Preston Western Distributor scheme explores the context of the local economy and justifies why the scheme is needed to achieve the economic objectives set out in the Strategic Case. It identifies what impacts the scheme is expected to have, lists which impacts are being assessed and defines the methodologies used to do so.

2.2 Context of the Local Economy

2.2.1 Introduction

Lancashire has one of the largest local economies in the North of England. In its Strategic Economic Plan produced in 2014, Lancashire's economy was valued at over £23 billion, and was described as being home to over 40,000 businesses employing in excess of 600,000 people, with a total population of 1.4m.

Although Lancashire has experienced sustained growth in the last decade, with readily identifiable economic 'hotspots' such as the cities of Preston and Lancaster, the area's average performance still consistently lags behind that of the UK and neighbouring city regions. The Strategic Economic Plan reports that, between 2007 and 2011, Lancashire's economy grew by 4.4% compared to 6.5% nationally and 4.9% regionally.

A summary of previously identified issues in terms of productivity and housing growth is provided in the sections below.

2.2.2 Productivity

The Strategic Economic Plan reported that the economic performance of Lancashire is more than 20% below the national average, in terms of GVA per resident. Without strategic interventions Lancashire's GVA gap with the rest of the country is predicted to increase. This will exacerbate the existing long-term trend and further deepen Lancashire's productivity and income gaps.

Over recent decades, Lancashire has failed to deliver the critical transport infrastructure needed to support business success. The Strategic Economic Plan estimated that this accounts for one-quarter of the current economic performance gap with the rest of the UK.

Preston is a major employment hub, acting as a large net importer of labour both from within Lancashire and from outside of the county with a net inflow of around 23,000 commuting trips. However, the limited capacity of the road network results in congestion. This is especially severe at peak commuting times.

Lancashire has ambitious plans to create thousands of jobs, with growth primarily focused on key developments such as the Lancashire Enterprise Zone site at Warton. However, the expansion of technology-based businesses with a high value output including the Lancashire Enterprise zone is constrained by traffic congestion and difficulty in attracting skilled labour due to the problems of commuting.

Preston Western Distributor is one of the transport schemes identified as being required to support the scale of such ambitious development. It is expected to address a key barrier to growth in the area: lack of network capacity. One of the primary objectives of the scheme is to improve access to the Lancashire Enterprise Zone at Warton – a centre of advanced manufacturing and high productivity – by widening its labour market catchment and supporting its continued growth and expansion.

2.2.3 Housing Growth

Another primary objective of the scheme is to support local economic growth by unlocking housing development in North West Preston. This development was identified in the Central Lancashire Core Strategy as a strategic location capable of making a particularly large contribution to meeting Preston's future housing needs and is central to the economic growth objectives in Lancashire.

However, North West Preston cannot be granted planning consent until the capacity of the highway network has been improved. Substantial additional transport infrastructure – such as PWD – is required to serve this new development and growth in the wider area. PWD will support the delivery of North West Preston by providing access for local traffic to the strategic road network and deterring it from using the congested routes to the east.

3. Economic Narrative - Identification and Justification of Expected Economic Impacts

Transport investments can have many varied economic impacts. This Economic Narrative aims to identify and justify all significant impacts which are expected to occur as a result of the scheme under consideration. The expected impacts should be justified on the basis of economic theory and evidence specific to the area affected by the transport scheme.

In addition to the quality of the analytical methods, the robustness and relevance of the economy theory and context specific evidence, used to identify and justify the expected economic impacts, will inform the weight placed on the analysis within the value for money assessment.

TAG Units A2.2 – A2.4 provide guidance on the type of information which could be presented in an Economic Narrative for the identification and justification of economic impacts.

The remainder of this chapter identifies the significant impacts expected as a result of the Preston Western Distributor.

3.1 Productivity Impacts

Increasing productivity is a national priority. Productivity is the key long-term determinant of the rate of economic growth, and the UK continues to face a significant productivity gap compared with other industrial nations. As well as this, as identified in Section 2.2 of this report Lancashire faces an additional productivity gap compared with the rest of the UK.

Transport is key for improving the productivity of businesses. The link between investing in transport infrastructure and enabling economic growth through increasing productivity is supported by academic and applied research. Lancashire's Strategic Economic Plan identified the lack of transport investment and increasing congestion as a major reason for the local productivity problems.

One way in which transport investment can improve productivity is by providing businesses with better links to other businesses and sources of labour. The effect of this increase in 'economic density' is known as agglomeration.

The Preston Western Distributor scheme is expected to reduce travel costs, and therefore increase economic density. As a result, there are likely to be increases in productivity due to agglomeration impacts. Where agglomeration is assessed based on reducing travel costs only, and without considering explicit changes in the location of economic activity, it is labelled in TAG Unit A2 as 'static clustering'.

Agglomeration impacts are likely to be greater from transport improvements near already densely clustered urban centres. TAG Unit A2 identifies a number of 'Functional Urban Regions': schemes that fall within or nearby these areas are more likely to receive agglomeration benefits. The PWD scheme lies within the Preston Functional Urban Region as shown in Appendix A of TAG Unit A2.4.

Agglomeration impacts will therefore be assessed.

3.2 Labour Supply Impacts

TAG Unit A2.3 identifies labour supply impacts as being likely to occur when transport is a barrier to employment. This can occur when an area has poor connections to employment centres and / or high transport costs relative to incomes.

As described in Section 2.2 of this report, poor transport links and increasing congestion has been identified as a barrier to employment growth in the area. Key employment sites such as Lancashire Enterprise Zone have described a difficulty in attracting skilled labour due to the problems of commuting.

As commuting costs fall following the introduction of Preston Western Distributor, some people who had been priced out of the labour market by high commuting costs would now be able to seek employment. The additional employment generated would add value to the scheme.

Labour supply impacts will therefore be assessed.

3.3 Induced Investment – Output Change in Imperfectly Competitive Markets

Output change in imperfectly competitive markets refers to changes in the level of economic activity as a result of transport investment. A reduction in generalised travel costs will induce investment and hence output. However, in an imperfectly competitive market, the value of the output is greater than the costs of production. The value of the resulting increased output is therefore not fully captured by the magnitude of the change in travel costs. Business user benefits therefore fail to capture the total value of the output change.

TAG Unit A2.2 provides examples of 'market failures', the presence of which would indicate an imperfectly competitive market. These include

- Imperfect Competition (Product markets): e.g. when markets are dominated by a small number of business.
- Tax Distortions: e.g. when companies adjust efficiency to adjust taxes payable.
- Imperfect Competition (Land markets) e.g. when land is owned by a small number of land owners.
- Co-ordination Failure: e.g. when multiple developers each under-invest in local transport improvements.
- Land Rationing: e.g. when policies (public or private) artificially limit the area of land available for development.

In the context of the Preston Western Distributor scheme, a significant proportion of the business user benefits accrue to freight. Within this market, a small number of large companies appear to have a significant proportion of the market. It is therefore likely that the scheme will result in output change that should be captured above the standard business user benefits.

Output change in imperfectly competitive markets will therefore be assessed.

3.4 Induced Investment: Dependent Development

Investment in housing and businesses may be facilitated by reducing transport costs: long-term commitments to transport investment allow for private investment to respond.

Central Lancashire is the county's most economically productive area and its main growth location, hence the continued effective operation of the area's transport network is essential if Preston and Lancashire as a whole is to remain competitive both nationally and internationally. The Preston Western Distributor is a key component of a programme of measures set out in the Central Lancashire Highways and Transport Master Plan that collectively will support the scale of development set out in the approved Central Lancashire Core Strategy and mitigate its impact on the transport network. By 2026, Central Lancashire is expected to have 22,200 additional homes, of which over 5,000 will be in the new 'North West Preston' (NWP) development site.

North West Preston (referred to as MD2 in local planning documents) accounts for 5,320 dwellings. The dependency of the NWP development on PWD was determined in line with TAG guidance as detailed in the Dependency Test note (November 2015) as part of the scheme Outline Business Case. The test concluded that with the exception of 450 dwellings at Haydock Grange site, NWP was dependent on the PWD and therefore not included in the core traffic modelling assumptions.

Subsequently, a review of existing planning data identified 5 sites within the NWP development to already have planning permission, either without conditions for developer contributions to the PWD or with no time threshold on such contributions. The 5 sites awarded conditional approvals are:

- Redrow, 330 dwellings;
- Connemara, 125 dwellings;

- Wainhomes Developments, 350 dwellings;
- Hollins Strategic Land Development, 140 dwellings; and
- CEG Development, 350 dwellings.

These 5 sites, comprising 1,295 dwellings, and the 450 dwellings at Haydock Grange were therefore not considered to be dependent developments on the PWD.

The remaining 3,575 dwellings at North West Preston residential development are considered to be dependent on the PWD scheme. Benefits from these developments will be captured within this Wider Economic Impact assessment.

4. Economic Narrative – Valuation of the Welfare Effects of Economic Impacts

4.1 Identification of Welfare Impacts

The appraisal process used to assess Preston Western Distributor is based on the principles of the HMT Green Book guidance, which advocates the use of cost-benefit (welfare) analysis to determine the value for money of investment spend. Welfare analysis captures a broad range of impacts, such as economic, environmental and social. The results of welfare analysis are reported in the Economic Case and inform the value for money assessment.

Within welfare analysis economic impacts are primarily captured by the estimation of user benefits. As described in Chapter 1, under a well-defined set of circumstances user benefits will capture the entire welfare impact of a transport investment. However, as described above in this Economic Narrative, several market failures have been identified which will lead to additional welfare impacts that should be captured.

As described above, the following wider economic impacts are expected to occur:

- Productivity improvements due to agglomeration impacts ('static clustering');
- Labour supply impacts;
- Increased business output ('output change in imperfectly competitive markets'); and
- Facilitating Investment ('dependent development').

The first three of these impacts are consistent with the 'Level 2 – Implicit Land Use Change' level of analysis defined in Table 2 of TAG Unit A2.1 (shown in Table 4 1 below).

Benefits from 'dependent development' – as listed in the 'Level 3' level of analysis – will also be captured. However, the other impacts identified within Level 3 will not be assessed.

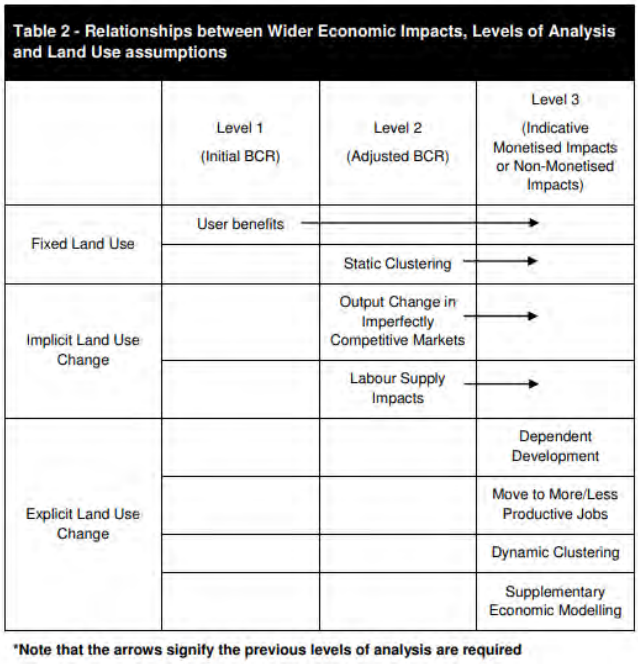


Table 2 - Relationships between Wider Economic Impacts, Levels of Analysis and Land Use assumptions

	Level 1 (Initial BCR)	Level 2 (Adjusted BCR)	Level 3 (Indicative Monetised Impacts or Non-Monetised Impacts)
Fixed Land Use	User benefits →		→
		Static Clustering →	→
Implicit Land Use Change		Output Change in Imperfectly Competitive Markets →	→
		Labour Supply Impacts →	→
Explicit Land Use Change			Dependent Development
			Move to More/Less Productive Jobs
			Dynamic Clustering
			Supplementary Economic Modelling

*Note that the arrows signify the previous levels of analysis are required

Table 4 1: Levels of Analysis

4.2 Methodologies to quantify and value the impacts

This section of the report identifies the effect that the expected economic impacts described above will have on welfare. It also describes methodologies to assess them. Table 4 2 provides a summary of assessment methodology.

Impact	Assessment Methodology
Productivity improvements due to agglomeration impacts ('static clustering')	Captured using DfT's standard WITA software, based on methodology defined in TAG Unit A2.4
Labour supply impacts	Captured using DfT's standard WITA software. Based on methodology defined in TAG Unit A2.3
Output change in imperfectly competitive markets	Calculated as 10% of Business and Freight User Benefits, as per TAG Unit A2.2 para 4.3.1
Dependent development	Calculated using 'Land Value Uplift' methodology defined in TAG Unit A2.2

Table 4 2: Welfare Valuation Methodology

Details of the assessment methodology and results for each impact are provided in the remaining chapters of this report.

5. Productivity Impacts

5.1 Introduction

As described above, productivity has been highlighted as a national and local priority. The scheme is expected to provide productivity benefits through an increase in agglomeration, as a reduction in travel costs effectively brings businesses and employees closer together. This assessment is defined in TAG as 'static clustering'.

This chapter defines the methodology used, presents the results, and advises how they can be used to inform the overall scheme business case.

5.2 Detailed Assessment Methodology

Use of WITA Software

WITA is a software designed to be used for the agglomeration assessment. For the PWD FBC assessment WITA v1.2 Be was used. This was the latest available version at the time of analysis.

Model Area and Zoning System

A new zoning system was used within the WITA analysis, in order to reconcile the traffic model data (based on the model's zoning system) and economic data (at Local Authority District (LAD) level). The new WITA zone boundaries followed either the traffic model zone or LAD boundaries, whichever is larger. In the core model area, the WITA zones followed LAD boundaries, which are larger than the traffic model zones. Outside this core model area, the WITA zones followed the traffic model zone boundaries which are larger than LADs zones.

The Wider Impacts study area should be limited to the area in which the traffic model provides a good estimate of the generalised costs of travel. Agglomeration calculations are based on the idea of 'effective density', which is a measure of how well an area is connected to everywhere else. An incorrect estimation of the base generalised costs would lead to an incorrect base case level of effective density, and hence an incorrect estimation of the impact resulting from any changes in agglomeration caused by the transport intervention.

For this reason, it was necessary to extract WITA benefits for only a core area of the model, for which the number of trips and generalised cost of travel are modelled in sufficient detail. Although benefits would be extracted for this core area only, WITA's calculations would be based on inputs which cover the full traffic model area. This is to allow full estimates of effective density based on all trips to or from the core area to be made.

An area around Preston was selected to represent this 'core area', including Local Authorities from Lancaster in the north to Bolton and Bury in the south, and as far east as Rossendale and Burnley.

Use of existing TUBA assessment

As discussed above, information on the cost and demand of travel input into WITA is based on the existing TUBA assessment. Demand, time and distance skims from the traffic model were prepared as part of the main TUBA assessment of the scheme, for each relevant user class and time period. The model skims were entered directly into WITA using the existing TUBA scheme parameter file. However, the following amendments were required:

As per TAG Unit A2.1, freight movements were excluded from central estimates of Wider Impacts. Any reference to HGV/LGV demand or costs of travel were therefore removed from the TUBA scheme file. Similarly, any car "other" trips (i.e. not business or commuting trips) were excluded.

The main TUBA assessment does not include data on public transport trips, or walking / cycling. Because Wider Impact assessments should consider all modes, the treatment of non-car modes is discussed below.

As the WITA software has not been updated for several years, it requires the use of a TUBA standard economics file from TUBA v1.7. The values within this file were updated to match those from the current version of TUBA (v1.9.11)

Non-Car Modes

The existing TUBA assessment does not include data on public transport trips, or walking / cycling. However, the guidance states that the assessments should consider all modes.

The required PT and walking demand and cost skims were created as follows:

- Public transport and walking demand: this was created based on factoring the car demand skims, using Census 'Journey to Work' data to inform the level of PT & walk demand relative to car. These demand conversion factors were calculated at a zone-to-zone level (i.e. not a blanket factor across the entire demand). Any walking demand for trips over 5km in length was removed.
- Public transport time skims were assumed to be twice the corresponding travel time for cars.
- Walking time skims were calculated by assuming a fixed walking speed of 5kph.
- Distance skims for both public transport and walking were assumed to be the same as for cars.

24hr commuting matrix

As part of the calculation of labour market impacts, WITA requires a 24hr commuting Production/Attraction (PA) demand matrix. This was derived at Local Authority level based on 2001 Census 'Journey to Work Matrix' information. As recommended in WITA guidance, this matrix was factored up to be consistent with the employment data input elsewhere in WITA.

Employment and economic parameters

All employment and economic data parameters required by WITA were taken from the latest standard "wider impacts" economic dataset provided by the DfT (Version 2.5 – July 2013).

5.3 Results

WITA outputs monetary values for each of the Wider Impacts assessed. In common with the results of the TUBA assessment, the results are for a 60 year appraisal period, and are provided in 2010 prices discounted to 2010. A summary of the results for each Wider Impact is provided below.

Sector	Results (£m, 2010 prices discounted to 2010)
Agglomeration – Manufacturing	£0.9m
Agglomeration – Construction	£8.5m
Agglomeration – Consumer Services	£8.8m
Agglomeration – Producer Services	£27.3m
Agglomeration - Total	**£45.5m**

Table 5 1: Agglomeration Results Summary

As discussed above, these results have been extracted for a 'core area' around Preston. While the results from this area amount to £45.5m, the overall benefits calculated for the entire country are £50.7m. This provides additional confidence in the results, as the majority of benefits accrue close to the scheme itself.

The results are also in a plausible range informed by past appraisal and evaluation evidence from other schemes. A report issued by Highways England's Chief Analyst's Division *('Economic Growth Technical Annex, February 2018'*) states that WITA benefits – primarily agglomeration benefits from static clustering – typically represent between 20% and 107% of business user benefits. In the case of this appraisal, the agglomeration benefits are 55% of the standard Business User benefits from the TEE table.

6. Labour Supply Impacts

6.1 Introduction

As discussed above, labour supply impacts are considered likely to occur, as reductions in commuting costs due to the scheme results in some people moving into work who had previously considered the cost of travel too high.

6.2 Results

As with the productivity benefits described above, labour supply impacts were calculated using the DfT's WITA software. The impacts were calculated in the same WITA run as the productivity impacts, so all elements of the methodology and assumptions are identical.

The labour supply results, over a 60 year appraisal period in 2010 prices discounted to 2010, are shown in Table 6 1. Note that, as with the productivity impacts, these benefits were extracted for a 'core study area' around Preston.

	Results (£m, 2010 prices discounted to 2010)
Labour Supply Impacts	£1.8m

Table 6 1: Labour Supply Benefits

Compared to the productivity results, these results are very small. This matches evidence from previous appraisals where the vast majority of WITA benefits are due to productivity increases rather than labour supply impacts. It also confirms the evidence described in the Economic Narrative, where poor productivity is a known significant problem, whereas the evidence of commuting costs causing a significant barrier to labour market entry is less strong.

7. Induced Investment – Output Change in Imperfectly Competitive Markets

7.1 Introduction

As described in Chapter 3, market failures have been identified which indicate that the assumption of 'perfect competition' in terms of business output. This includes the fact that the scheme delivers significant benefits to freight, where a small number of large companies dominate the sector.

Because of these market failures, the additional output produced by firms as a result of decreased travel costs is not fully captured in the standard business user benefits calculation. An additional welfare impact is therefore calculated below.

7.2 Results

As per TAG Unit A2.2 (paragraph) 4.3.1, the additional welfare effects are estimated by applying a 10% uplift factor to the business and freight user benefits.

The results of this uplift are shown in Table 7 1 below.

	£m, 2010 prices discounted to 2010
Standard Business User Benefits (incl. freight) due to time savings and VOC changes	£81.4m
10% Uplift to account for Output Change in Imperfectly Competitive Markets	**£8.14m**

Table 7 1: Output Change in Imperfectly Competitive Market Calculation

8. Induced Investment – Dependent Development Benefits

8.1 Introduction

As described in Chapter 3, it has been determined that 3,575 houses in the proposed North West Preston development are dependent on Preston Western Distributor. This chapter explores the methodology used to assess the resultant welfare impacts and presents the results.

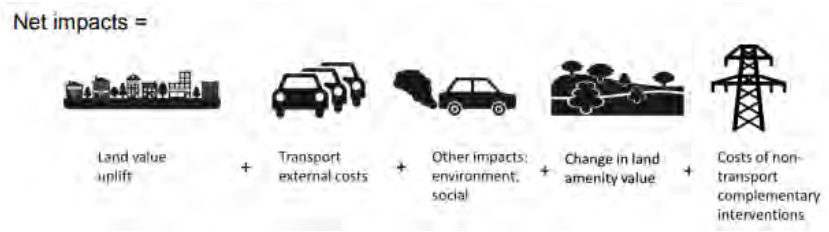
8.2 Methodology

8.2.1 Overview of Methodology

The benefits to society from the dependent developments will be captured through assessment of the land value uplift. Land value uplift measures the difference between the price of land in its new and former uses and represents the private gain to land owners. It provides a convenient way of estimating the economic value of a development which is dependent on a transport intervention.

Land value uplift benefits for PWD will be calculated in line with TAG Unit A2.2 and the DfT's *'Capturing housing impacts in transport appraisal'* case study document (2018), and will consistent with the methodology set out in the Ministry of Housing, Communities and Local Government (MHCLG) appraisal guide.

The DfT's "Valuing Housing Impacts" workbook has been used to undertake the calculations. This calculates the value of the dependent development according to the following formula:



8.2.2 Site Area and Phasing Assumptions

As described in Section 3.4, 3,575 of the 5,322 houses outlined in the North West Preston Masterplan (*Preston City Council and Lancashire County Council, March 2017)* have been deemed to be dependent on Preston Western Distributor.

The site area of the full site is defined as 319.7ha in the Masterplan. The proposed land use is a mix of residential and other types of land. Table 8 1 shows the land-uses which have been valued in this assessment, and the anticipated amount of each which is dependent on the PWD. It has been assumed that 3,575 / 5,322 = 67% of the site is dependent on PWD, and that this proportion applies to all land uses.

Land Use	Area in NWP Masterplan	Area assumed to be dependent on PWD (67% of full area)
Residential Land	177ha	119ha
Parks and Play Areas	34ha (includes 20% of the 'Green Infrastructure' land)	23ha
Commercial and Educational Land	13ha	9ha

Table 8 1: Land Uses Captured in Land Value Uplift

Information on the phasing of the development was not required for this land value uplift assessment. However, phasing information was used to inform the associated 'jobs and GDP' assessment in Chapter 10.

8.2.3 Land Value Assumptions

The land values for the new and former uses are shown below, along with a reference to the source of the cost data.

Land Use	Land Value per ha (£000s, 2010 prices)	Source
Existing Use: 'Agricultural – Dairy'	£17	'Agricultural – Dairy - Lancashire', from VOA Property Market Report 2011 via DfT 'Valuing Housing Impacts' worksheet
Residential Use	£1,425	'Residential' – average of Liverpool and Manchester, from VOA Property Market Report 2011 via DfT 'Valuing Housing Impacts' worksheet
Parks and Play Areas	£735	From externality cost: Value per hectare, per year for 'Urban Core (Public Space, City Park)'. From "Valuing the External Benefits of Undeveloped Land; a review of the economic literature", ODPM, 2002, via DfT 'Valuing Housing Impacts' worksheet
Commercial and Educational Land	£550	'Industrial Land' – average of Liverpool and Manchester, from VOA Property Market Report 2011 via DfT 'Valuing Housing Impacts' worksheet

Table 8 2: Land Values in Existing and New Uses

All land becomes more valuable in its new proposed use. Residential land is by a considerable distance the most valuable of the proposed land types. It also constitutes almost 80% of the site area assessed.

8.2.4 Land Amenity Value Assumptions

Land amenity value is the level of pleasantness of the area, and is the difference in amenity value before and after the development. Values for different land types are typically taken from the TAG databook *'Valuing Housing Impacts Workbook*'. The values used are negative 'in perpetuity' values: i.e., it calculates the loss to society from losing the existing amenity value permanently.

The existing land types and site areas were provided by Lancashire County Council. The amenity values were taken from the DfT's *'Valuing Housing Impacts Workbook*'. They are summarised in Table 8 3 below.

Land Use	Amenity Present Value per ha (£000s, 2010 prices, perpetuity value)	Proportion of existing site area that has this land type
Agricultural (Intensive)	£27.4	98.3%
Natural and Semi-Natural Land	£1,818	1.2%
Urban Fringe	£236.6	0.1%
Average Site Value	**£49.0**	

Table 8 3: Land Amenity Values in Existing Uses

8.2.5 Transport External Costs

Transport external costs are the costs imposed on existing transport users by new users of the network, such as increased levels of congestion.

These will be calculated in line with TAG Unit A2.2, based on a TUBA assessment of scenarios with and without the dependent development in place. The development was assumed to be entirely in place by the traffic model design year of 2037.

Only TUBA impacts on existing users were derived during this TUBA calculation.

The total impact from this TUBA run is shown in Table 8 4 below. These results are presented over a 60 year appraisal period, in line with all other TUBA results derived as part of the scheme assessment.

TUBA Impact	Disbenefit (2010 prices, discounted to 2010)
Travel Time	-£124m
Vehicle Operating Costs	-£2m
Indirect Taxes	-£0.5m
TOTAL	**-£126.5**

Table 8 4: Transport External Costs Calculated in TUBA

8.2.6 Non-Transport Complementary Interventions

Non-transport complementary interventions are the costs of other infrastructure such as schools and other utilities that are also required to deliver the housing. Given the political will for North West Preston development to proceed, it has been assumed that all required complementary interventions will occur. No additional cost allowance has been made for these interventions within the land value uplift calculation.

8.2.7 Results

The land value uplift calculation measures the difference between the price of land in its new and former users, and represents the private gain to land owners. Based on the land values summarised above, this total “planning gain” has been estimated to be £188.6m.

The Transport External Costs to existing road users from an increase in congestion when the housing is built was calculated in TUBA. As described above, this amounts to a disbenefit of -£126.5m.

The change in amenity value from losing the land in its current use has been calculated to be -£7.4m.

A summary of the results is provided in Table 8 5 below.

	Benefit (2010 prices discounted to 2010)
Planning Gain (Land Value Uplift)	£188.6m
Transport External Cost (impact of new congestion on existing road users)	-£126.5m
Loss of Amenity Value	-£7.4m
Total Dependent Development Benefits	**£54.7m**

Table 8 5: Summary of Dependent Devlopment Benefits

The results suggest that there is a significant benefit to the economy through allowing the dependent housing at North West Preston to proceed. This is partially offset by a loss of amenity due to losing the land in its current

use, and from an increase in congestion on the rest of the road network once the housing is built. However, the overall impact is a large beneficial impact. This can be used to support the economic case for the scheme.

8.2.8 Additionality

The extent to which a road improvement increases the size of the national economy (i.e. is 'additional') will depend on the extent to which leakage, deadweight, displacement and multiplier effects are expected to occur. These are defined as follows:

- **Leakage effects** – the extent to which economic growth takes place outside of target area of the Government intervention
- **Deadweight effects** – the extent to which the economic growth would have occurred anyway without the Government intervention.
- **Displacement effects** – the extent to which economic growth in one location results in lower growth elsewhere in the target area.
- **Multiplier effects** – the extent to which a rise in economic growth is 'multiplied' by increased business and consumer spending, known as 'indirect' and 'induced' multiplier effects respectively.

A scheme may therefore increase economic growth at the local but not national levels if resources are displaced from other areas. For example, increased employment in the construction sector and its supply chain due to a road investment may increase employment in one area at the expense of jobs elsewhere in the country.

In order to assess a scheme's value for money it is necessary to assess its impacts at the national level. It is therefore necessary to assess the extent to which the benefits from the North West Preston development are 'additional' nationally. Leakage effects are not expected to be significant at the national level, as all impacts are expected within the United Kingdom. Deadweight effects are considered to already have been accounted for within Section 3.4 of this note. Multiplier effects will not be included within this assessment.

No allowance has been made for displacement within this assessment. The North West Preston housing site has long been allocated as part of the local planning process, and forms a key part of the sub-regional priorities set out in the Lancashire's Strategic Economic Plan. If North West Preston could not come forward, no readily available site would be ready to fulfil NWP's housing allocation. There would likely be a genuine loss to the national housing stock in the medium term.

The land value uplift benefits calculated above is therefore considered to be a reasonable assumption of the genuine economic benefits of unlocking North West Preston.

It should be noted that displacement effects are not relevant for the other Wider Economic Impacts assessed for PWD, such as raising productivity or increasing the labour supply. Those impacts are not expected to displace economic growth as they do not divert resources away from other productive activities

8.3 Impact on jobs and GDP

The Economic Case uses an entirely welfare-based approach for assessment. However, the impact of the scheme on jobs and GDP may be of interest in the Strategic Case, to understand how well local economic objectives are met.

An assessment of the impact of North West Preston on jobs and GDP – to support the Strategic Case – is provided in Chapter 10

9. Use of Results to Support the Economic Case

9.1 Introduction

All the results calculated in the report above are welfare-based calculations. They can therefore be used to support the economic case for the scheme. This Economic Impact Report should therefore be appended to the economic case.

However, due to differences in the evidence base and economic theory behind each impact, not all impacts are treated in the same way. This chapter describes how the results should be reported and used to support the economic case.

9.2 Inclusion of impacts in adjusted BCR

While 'Level 1' benefits such as user benefits are included within a scheme's initial BCR, there is more uncertainty around 'Level 2' wider economic impact benefits.

Nevertheless, the following wider economic impacts can be included within the scheme's adjusted BCR:

- **Labour supply impacts**
- **Productivity (static clustering)**
- **Output change in imperfectly competitive markets**

A summary of the results of these impacts – based on results presented in previous chapters – is provided in Table 9 1. The sum of these benefits can be included within the scheme's adjusted BCR.

	Benefits (£m, 2010 prices discounted to 2010)
Labour supply impacts (see Chapter 6)	£1.8m
Productivity: Static Clustering (see Chapter 5)	£45.5m
Output change in imperfectly competitive markets (see Chapter 7)	£8.1m
TOTAL	**£55.4m**

Table 9 1: Wider Economic Impacts for Inclusion in Adjusted BCR

9.3 Indicative Monetised Impacts

Benefits from Dependent Developments cannot be included in the adjusted BCR. However, they are used as indicative monetised impacts to support the Value for Money conclusions of the scheme.

The benefits from Dependent Developments are summarised in Table 9 2 below.

	Benefits (£m, 2010 prices discounted to 2010)
Dependent Development benefits (land value uplift)	£54.7m

Table 9 2: Dependent Development Benefits for Use as Indicative Monetised Assessment

10. Use of Results to Support the Strategic Case

10.1 Reporting Impacts in the Strategic Case

The purpose of the Strategic Case is to determine whether a proposed transport scheme achieves Government objectives, such as to regenerate a local area or reduce noise pollution. It is here that non-welfare measures of economic impacts, such as GDP, can be reported, if they inform the extent to which the proposed transport scheme achieves the Government's objectives.

Within the Economic Case welfare is the metric used to value economic impacts. This serves a specific purpose to inform the value for money assessment. In the Strategic Case, however, an economic objective may be better informed by other metrics, such as change in GDP.

The Preston Western Distributor's Strategic Case includes an objective to:

- **Support local economic growth by unlocking housing development in North West Preston**

While the Economic Case measures the extent to which this objective is met in terms of welfare at a national level, the success of this objective can also be considered at a local level. Supporting the scale of development set out in the Central Lancashire Core Strategy, specifically delivery of North West Preston, was a key aim of the scheme when it was identified in the City Deal.

The extent to which the scheme achieves this local economic objective can be captured within the Strategic Case. A description of this assessment is included in this chapter.

Although the expected impact on local housing supply is consistent between the economic and strategic cases, the methodology for measuring the impact is different. The economic case assesses the welfare impact, while the strategic case focuses on the change in local GDP (known as Gross Value Added or GVA).

10.2 Estimating Jobs and GVA Impacts

The local or national jobs and GVA impacts associated with the dependent development cannot be inferred from the land value uplift approach. Instead, they are estimated using 'additionality modelling' as described in TAG Unit M5.3 ('Supplementary Economy Modelling').

The success of the scheme in delivering the identified local economic objective is measured by:

- The amount of housing unlocked: 5,320 dwellings at NWP supported, of which 3,575 could not occur without the scheme.
- The associated impact on the local economy.

The change in GVA is based on the assumption that each new home will indirectly support 0.15 new jobs in the local economy. This results in 536 jobs overall. Each job is assumed to have a 'persistence' in the economy of 10 years, i.e. the GVA benefit for each job is accrued for 10 years.

The estimated number of new jobs in each year is multiplied by a typical 'GVA per job' value for the local area. This GVA value was based on typical GVA per job for the 'Mid Lancs' NUTS3 geography, adjusted to 2/3rd of the average to reflect the likely lower wage profile of jobs created by the North West Preston development. The GVA value used for 2026 (first year of assumed job creation) was £34,505 in 2010 prices. GVA growth of 1.5% per year in real terms was assumed.

Adjustments were made to account for the displacement, leakage, deadweight and multiplier effects described earlier in this report. At a local level (to support the strategic case), 0% displacement was assumed. This resulted in a total GVA benefit of £104m (in 2010 prices, discounted to 2010).

A summary of the information used to support the Strategic Case is provided in Table 10 1.

Number of jobs supported by scheme	536
Associated GVA benefit to local area	£104m (2010 prices discounted to 2010)

Table 10 1: Benefits of the scheme for reporting in the Strategic Case

10.3 Consistency with Economic Case

In considering the scheme's economic objectives at a local level, the fact that any increase in economic activity may simply be displaced from elsewhere in the country is not a primary concern.

However, if the impact was considered at a national level, a displacement level of 84% would be assumed (based on HCA Additional Guide, fourth edition 2014). By taking account of displacement in this way, the equivalent GVA figure at a national level is calculated to be £17 million (in 2010 prices discounted to 2010).

This change to national GVA is not actually considered within the Economic Case. The Economic Case uses a welfare-based assessment approach rather than a GVA / GDP-based approach, with the economic impact of unlocking NWP instead assessed using the 'land value uplift' approach described earlier in this report. However, all assumptions around the size and timing of NWP itself are consistent between the Economic and Strategic Cases.

11. Summary and Conclusion

This report describes the theory and valuation behind these wider economic impacts of the Preston Western Distributor scheme.

The context around the local economy along with the description and justification of why certain wider impacts are expected to occur as a result of the PWD are provided in the form of the Economic Narrative in chapters 2, 3 and 4.

The following impacts have been identified as potentially significant and therefore included in the analysis:

- Productivity improvements due to agglomeration impacts ('static clustering');
- Labour supply impacts;
- Increased business output ('output change in imperfectly competitive markets'); and
- Facilitating Investment ('dependent development').

The methodologies for quantification of the impacts are based on the latest WebTAG and include the use of WITA for the assessment of agglomeration, labour supply and increased business output and the use of the DfT's "Valuing Housing Impacts" workbook to calculate the dependent development benefits.

The results of the assessment show that the scheme will provide £45.5m of agglomeration benefits, £1.8m of labour supply benefits and £8.1m of benefits from output change in imperfectly competitive markets. These benefits can be included in the Adjusted BCR of the scheme.

The dependent development benefits (land value uplift) amount to £54.7m and while they cannot be included in the adjusted BCR they can be used as indicative monetised impacts to support the Value for Money conclusions.

The leakage, displacement, deadweight and multiplier effects have been considered as part of the assessment and it was concluded that the PWD wider economic impacts are not only local but can be attributed to the national economy.

Finally, the local or national jobs and GVA impacts associated with the NWP dependent development supported by the PWD have been quantified to support the Strategic Case of the scheme. This resulted in a total GVA benefit of £104m to local economy with the equivalent GVA figure at a national level calculated to be £17m thus confirming that the scheme will achieve one of its primary objectives to support local economic growth by unlocking housing development in North West Preston.

Appendix B. Scheme Costs and Spend Profile

Undiscounted scheme costs including Risk Adjustment, 3% Optimism Bias and inflation (in £000's) in 2019 Prices							
Cost Element	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**Total**
Construction		£ 10,214	£ 49,287	£ 49,287	£ 41,472	£ 18,029	£168,290
Land/Part 1 Claims/Property		£ 6,548	£ 6,603	£ -	£ -	£ -	£13,151
Preparation		£ 1,305	£ -	£ -	£ -	£ -	£1,305
Supervision		£ 160	£ 646	£ 651	£ 656	£ 219	£2,333
Totals		£ 18,228	£ 56,536	£ 49,938	£ 42,128	£ 18,248	**£185,079**

Expenditure Profile							
Cost Element	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**Total**
Construction	-	6.1%	29.3%	29.3%	24.6%	10.7%	100%
Land/Part 1 Claims/Property	-	49.8%	50.2%	0.0%	0%	0%	100%
Preparation	-	100.0%	0.0%	0%	0%	0%	100%
Supervision	-	6.9%	27.7%	27.9%	28.1%	9.4%	100%

Discounted scheme costs including Risk Adjustment, 3% Optimism Bias and inflation (in £000's) in 2010 Prices - Factor Price							
Cost Element	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**Total**
Construction	£ -	£ 6,480	£ 30,212	£ 29,191	£ 23,732	£ 9,968	£99,583
Land/Part 1 Claims/Property	£ -	£ 4,154	£ 4,047	£ -	£ -	£ -	£8,202
Preparation	£ -	£ 828	£ -	£ -	£ -	£ -	£828
Supervision	£ -	£ 102	£ 396	£ 386	£ 375	£ 121	£1,380
Totals	£ -	£ 11,564	£ 34,656	£ 29,576	£ 24,107	£ 10,089	**£109,993**

Discounted scheme costs including Risk Adjustment, 3% Optimism Bias and inflation (in £000's) in 2010 Prices - Market Price							
Cost Element	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**Total**
Construction	£ -	£ 7,712	£ 35,953	£ 34,737	£ 28,241	£ 11,862	£118,504
Land/Part 1 Claims/Property	£ -	£ 4,944	£ 4,817	£ -	£ -	£ -	£9,760
Preparation	£ -	£ 985	£ -	£ -	£ -	£ -	£985
Supervision	£ -	£ 121	£ 471	£ 459	£ 447	£ 144	£1,642
Totals	£ -	£ -	£ -	£ -	£ -	£ -	**£130,891**

Appendix C. Capital Costs of Maintenance

Capital Cost of Maintenance - Double Carriageway preferred option

Methodology

This spreadsheet calculates the additional cost of maintaining the new sections of road. This is based on the capital cost (people, machinery etc.) of maintenance.
When the scheme is in place, the new road links will require additional maintenance that would not occur if the scheme was not built.
This cost is calculated using the typical maintenance profiles provided in the QUADRO manual July 2017 (DMRB Volume14 Sec 1 Part 2 Chapter 4), based on the road's length, flow and carriageway standard.
Link lengths are calculated from the CLTM SATURN model.
The cost for slip roads is assumed to be a quarter of dual-carriageway to account for differnces in the number of lanes for the carriageways.
3% Optimism Bias is included in the final estimated costs.
The maintenance cost of the new scheme is likely to be partially off-set by a reduction in the maintenance required on the existing road due to a reduction in traffic. However, this effect has been ignored in this assessment.
The maintenance costs of existing local roads that receive an upgrade or realignment due to the scheme will be reduced in the short term due to the renewed running surface. However this effect has been ignored in this assessment to ensure the conservative approach.
Table 1 shows the standard maintenance costs from the DMRB Volume 14 in average 2010 prices.

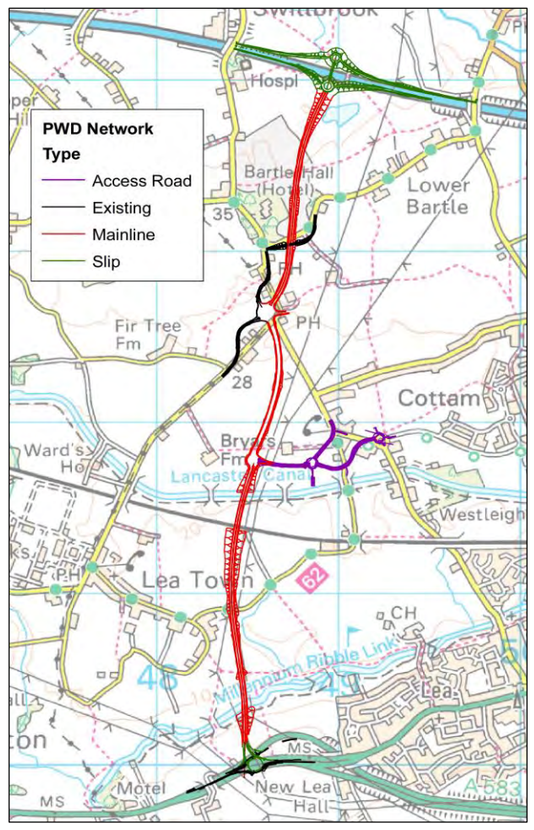


Table 1 - Standard Costs

Cost: In £'000 per Km of road (i.e. both directions), in average 2010 prices (DMRB Volume14 Sec 1 Part 2 Chapter 4)

Job Description	D2AP		SA2P	
	Job	Cost	Job	Cost
Thin Surfacing (TS)	TS	£168	TS	£66
Inlay (IN) (50,100mm)	IN	£354	IN	n/a
		£576		n/a
Overlay (OV) (50mm. 100mm)	OV	n/a	OV	£240
		n/a		£252

Road Section Parameters

Section	Length (km)	Carriageway Standard	Opening Year Flow (AADT)	Maintenance Profile used (see QUADRO manual Table 4/1)
PWD - Full Route	4.379	Dual C'way	xxxx	Dual 2 Lane (D2AP) Initial Flow 30,000 AADT (LLP)
PWD - Slip Roads	2.375	Dual C'way / 4	xxxx	Dual 2 Lane (D2AP) Initial Flow 30,000 AADT (LLP) / 4
Access Roads	0.787	Single C'way	xxxx	Single 2 Lane Initial Flow 12,000 AADT (DLP)

Maintenance Cost Estimates

Table 2a: PWD - Full Route

Years after Opening	0	11	22	32	42	52	
Year	2022	2033	2044	2054	2064	2074	**Total 60yr**
Works Type	None	TS	In	In	In	In	
Cost per Km (£000s, 2010 prices)	0.00	168.00	354.00	576.00	354.00	354.00	-
Cost per Section (£000s, 2010 prices)	0.00	735.67	1550.17	2522.30	1550.17	1550.17	**7908.47**
Cost per Section with 3% OB (£000s, 2010 prices, undiscounted)	**0**	**757.74216**	**1596.67098**	**2597.97312**	**1596.67098**	**1596.67**	**8145.73**

Table 2b: PWD - Slip Roads

Years after Opening	0	11	22	32	42	52	
Year	2022	2033	2044	2054	2064	2074	**Total 60yr**
Works Type	None	TS	In	In	In	In	
Cost per Km (£000s, 2010 prices)	0.00	42.00	88.50	144.00	88.50	88.50	-
Cost per Section (£000s, 2010 prices)	0.00	99.75	210.19	342.00	210.19	210.19	**1072.31**
Cost per Section with 3% OB (£000s, 2010 prices, undiscounted)	**0**	**102.7425**	**216.493125**	**352.26**	**216.493125**	**216.493**	**1104.48**

Table2c: Access Roads

Years after Opening	0	11	22	32	42	52	
Year	2022	2033	2044	2054	2064	2074	**Total 60yr**
Works Type	None	TS	Ov	TS	Ov	TS	
Cost per Km (£000s, 2010 prices)	0.00	66.00	240.00	66.00	252.00	66.00	-
Cost per Section (£000s, 2010 prices)	0.00	51.94	188.88	51.94	198.32	51.94	**543.03**
Cost per Section with 3% OB (£000s, 2010 prices, undiscounted)	**0**	**53.50026**	**194.5464**	**53.50026**	**204.27372**	**53.5003**	**559.32**

Maintenance Cost Summary

Section	Additional Maintenance Cost per Section **with 3% OB** (£m, 2010 prices, undiscounted)	Additional Maintenance Cost per Section (£m, 2010 prices, undiscounted)
PWD - Full Route	£8.15m	£7.91m
PWD - Slip Roads	£1.10m	£1.07m
Access Roads	£0.56m	£0.54m
Total	**£9.81m**	**£9.52m**

Appendix D. TEE, AMCB and PA Tables

Economic Efficiency of the Transport System (TEE)

Non-business: Commuting	ALL MODES		ROAD	BUS and COACH	RAIL	OTHER
User benefits	TOTAL		Private Cars and LGVs	Passengers	Passengers	
Travel time	£95,857		£95,857			
Vehicle operating costs	-£6,077		-£6,077			
User charges	£0		£0			
During Construction & Maintenance	-£936		£0			
NET NON-BUSINESS BENEFITS: COMMUTING	£88,844	*(1a)*	£89,780			

Non-business: Other	ALL MODES		ROAD	BUS and COACH	RAIL	OTHER
User benefits	TOTAL		Private Cars and LGVs	Passengers	Passengers	
Travel time	£98,485		£98,485			
Vehicle operating costs	-£5,902		-£5,902			
User charges	£0		£0			
During Construction & Maintenance	-£961		£0			
NET NON-BUSINESS BENEFITS: OTHER	£91,622	*(1b)*	£92,583			

Business							
User benefits			Goods Vehicles	Business Cars & LGVs	Passengers	Freight	Passengers
Travel time	£85,326		£24,936	£60,390			
Vehicle operating costs	-£3,958		£2,340	-£6,298			
User charges	£0		£0	£0			
During Construction & Maintenance	-£833		£0	£0			
Subtotal	£80,535	*(2)*	£27,277	£54,092			

Private sector provider impacts			Freight	Passengers
Revenue	£0			
Operating costs	£0			
Investment costs	£0			
Grant/subsidy	£0			
Subtotal	£0	*(3)*		

Other business impacts						
Developer contributions	£0	*(4)*				
NET BUSINESS IMPACT	£80,535	*(5) = (2) + (3) + (4)*				

TOTAL		
Present Value of Transport Economic Efficiency Benefits (TEE)	£261,001	*(6) = (1a) + (1b) + (5)*

Notes: Benefits appear as positive numbers, while costs appear as negative numbers.
All entries are discounted present values, in 2010 prices and values

Public Accounts (PA) Table

Local Government Funding	ALL MODES TOTAL		ROAD INFRASTRUCTURE	BUS and COACH	RAIL	OTHER
Revenue	£0		£0			
Operating Costs	£2,728		£2,728			
Investment Costs	£130,900		£130,900			
Developer and Other Contributions	£0		£0			
Grant/Subsidy Payments	£0		£0			
NET IMPACT	£133,628	*(7)*	£133,628			
Central Government Funding: Transport						
Revenue	£0		£0			
Operating costs	£0		£0			
Investment Costs	£0		£0			
Developer and Other Contributions	£0		£0			
Grant/Subsidy Payments	£0		£0			
NET IMPACT	£0	*(8)*	£0			
Central Government Funding: Non-Transport						
Indirect Tax Revenues	-£8,235	*(9)*	-£8,235			
TOTALS						
Broad Transport Budget	£133,628	*(10) = (7) + (8)*				
Wider Public Finances	-£8,235	*(11) = (9)*				

Notes: Costs appear as positive numbers, while revenues and ‘Developer and Other Contributions' appear as negative numbers.
All entries are discounted present values in 2010 prices and values.

Analysis of Monetised Costs and Benefits

Noise	£6,222	*(12)*
Local Air Quality	£575	*(13)*
Greenhouse Gases	-£17,646	*(14)*
Journey Quality		*(15)*
Physical Activity		*(16)*
Accidents	£33,739	*(17)*
Economic Efficiency: Consumer Users (Commuting)	£88,844	*(1a)*
Economic Efficiency: Consumer Users (Other)	£91,622	*(1b)*
Economic Efficiency: Business Users and Providers	£80,535	*(5)*
Wider Public Finances (Indirect Taxation Revenues)	£8,235	*- (11) - sign changed from PA table, as PA table represents costs, not benefits*
Present Value of Benefits (see notes) (PVB)	£292,127	*(PVB) = (12) + (13) + (14) + (15) + (16) + (17) + (1a) + (1b) + (5) - (11)*
Broad Transport Budget	£133,628	*(10)*
Present Value of Costs (see notes) (PVC)	£133,628	*(PVC) = (10)*

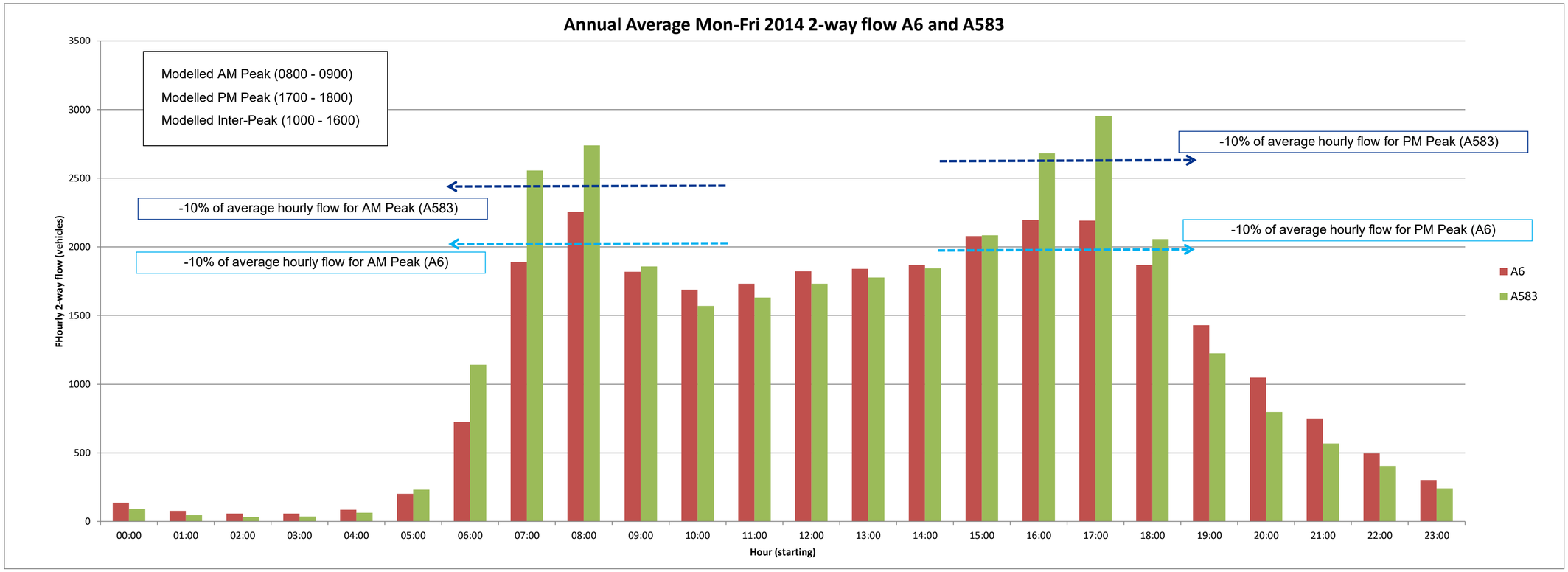
OVERALL IMPACTS

Net Present Value (NPV)	£158,499	NPV=PVB-PVC
Benefit to Cost Ratio (BCR)	2.19	BCR=PVB/PVC

Note : This table includes costs and benefits which are regularly or occasionally presented in monetised form in transport appraisals, together with some where monetisation is in prospect. There may also be other significant costs and benefits, some of which cannot be presented in monetised form. Where this is the case, the analysis presented above does NOT provide a good measure of value for money and should not be used as the sole basis for decisions.

Appendix E. Flow Analysis for TUBA Annualisation Factors

A6 & A583 - Derivation of Annualisation Factors



Expansion Factors	
Expansion factor for Mon-Fri AM Peak period is 1*2=	2
Expansion factor for Mon-Fri PM Peak period is 1*2=	2

Weekdays	A6	A583
Average AM Peak	2255	2739
Average PM Peak	2190	2953
Average IP Peak	1838	1773
Average flow (7pm-7am)	447	406
-10% Average AM	2030	2465
-10% Average PM	1971	2658

Results:	Annualisation factors derived from expansion factors using flows above 90% of the average modelled peak period for Mon-Fri	
1	The annualisation factor for the AM period is 2*253 working days=	506
2	The annualisation factor for the IP period is 6*253 working days=	1518
3	The annualisation factor for the PM period is 2*253 working days=	506
4	The annualisation factor for the AM shoulder is 1*253 working days=	253
5	The annualisation factor for the PM shoulder is 1*253 working days=	253

Appendix F. TUBA Input File

SCHEME SPECIFIC PARAMETERS

PARAMETERS

TUBA_version	1.9.11
run_name	CLHTM
do_min_name	Do Minimum
do_som_name	Do Something
first_yr	2022
horizon_yr	2081
modelled_yrs	2022 2037 2042
detail	Yes
current_yr	2018
print_warn	All
P&R_car_speed	65.0
zones_as_sectors	No

TIME_SLICES

*no.	duration(min)	annualisation	period	description
1	60	506	1	Ave AM Peak
2	60	506	2	Ave PM Peak
3	60	1518	3	Ave INTER Peak
4	60	253	1	Ave AM Peak Shoulder
5	60	253	2	Ave PM Peak Shoulder

SCHEMES_DM

*Mode	1st Construction year	Opening_yr	Stage
1	2019	2022	OP
2	2019	2022	OP

DO_MIN_COSTS

*Type	Mode	Funding	Cost	Price	RPI

DO_MIN_PROFILE

*Year	Mode	%Const	%Land	%Prep	%Super	%Maint	%Op	%Grant	%Dev
2018	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2019	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2020	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2021	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2022	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2023	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2024	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2025	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2026	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2027	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2028	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2029	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2030	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2031	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2032	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2033	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

```
 2034    1       0.0       0.0       0.0       0.0       0.0       0.0       0.0
 0.0
 2035    1       0.0       0.0       0.0       0.0       0.0       0.0       0.0
 0.0
 2036    1       0.0       0.0       0.0       0.0       0.0       0.0       0.0
 0.0
 2037    1       0.0       0.0       0.0       0.0       0.0       0.0       0.0
 0.0
 2038    1       0.0       0.0       0.0       0.0       0.0       0.0       0.0
 0.0
 2039    1       0.0       0.0       0.0       0.0       0.0       0.0       0.0
 0.0
 2040    1       0.0       0.0       0.0       0.0       0.0       0.0       0.0
 0.0
 2041    1       0.0       0.0       0.0       0.0       0.0       0.0       0.0
 0.0


DO_MIN_DELAY_COSTS
*Year  Mode     Business        Commuting       Other   Freight


SCHEMES_DS
*Mode  1st Construction year     Opening_yr      Stage
  1      2019                       2023          OP

DO_SOM_COSTS
*Type     Mode  Funding      Cost        Price       GDP
  C          1    cen      168290.0       F        115.65
  L          1    cen       13151.6       F        115.65
  P          1    cen        1305.2       F        115.65
  S          1    cen        2333.7       F        115.65
  M          1    cen        9809.5       F        100.00

DO_SOM_PROFILE
*Year  Mode   %Const     %Land     %Prep    %Super    %Maint       %Op      %Grant
%Dev
 2018    1       0.0       0.0       0.0       0.0       0.0       0.0       0.0
 0.0
 2019    1       6.1      50.0     100.0       7.0       0.0       0.0       0.0
 0.0
 2020    1      29.3      50.0       0.0      27.9       0.0       0.0       0.0
 0.0
 2021    1      29.3       0.0       0.0      27.9       0.0       0.0       0.0
 0.0
 2022    1      24.6       0.0       0.0      27.9       0.0       0.0       0.0
 0.0
 2023    1      10.7       0.0       0.0       9.3       0.0       0.0       0.0
 0.0
 2024    1       0.0       0.0       0.0       0.0       0.0       0.0       0.0
 0.0
 2025    1       0.0       0.0       0.0       0.0       0.0       0.0       0.0
 0.0
 2026    1       0.0       0.0       0.0       0.0       0.0       0.0       0.0
 0.0
 2027    1       0.0       0.0       0.0       0.0       0.0       0.0       0.0
 0.0
 2028    1       0.0       0.0       0.0       0.0       0.0       0.0       0.0
 0.0
 2029    1       0.0       0.0       0.0       0.0       0.0       0.0       0.0
 0.0
 2030    1       0.0       0.0       0.0       0.0       0.0       0.0       0.0
 0.0
 2031    1       0.0       0.0       0.0       0.0       0.0       0.0       0.0
 0.0
 2032    1       0.0       0.0       0.0       0.0       0.0       0.0       0.0
 0.0
```

2033	1	0.0	0.0	0.0	0.0	9.3	0.0	0.0
0.0								
2034	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0								
2035	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0								
2036	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0								
2037	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0								
2038	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0								
2039	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0								
2040	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0								
2041	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0								
2042	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0								
2043	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0								
2044	1	0.0	0.0	0.0	0.0	20.5	0.0	0.0
0.0								
2045	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0								
2046	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0								
2047	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0								
2048	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0								
2049	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0								
2050	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0								
2051	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0								
2052	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0								
2053	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0								
2054	1	0.0	0.0	0.0	0.0	30.6	0.0	0.0
0.0								
2055	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0								
2056	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0								
2057	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0								
2058	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0								
2059	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0								
2060	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0								
2061	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0								
2062	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0								
2063	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0								
2064	1	0.0	0.0	0.0	0.0	20.6	0.0	0.0
0.0								
2065	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0								
2066	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0

```
 0.0
 2067    1       0.0       0.0       0.0       0.0       0.0       0.0       0.0
 0.0
 2068    1       0.0       0.0       0.0       0.0       0.0       0.0       0.0
 0.0
 2069    1       0.0       0.0       0.0       0.0       0.0       0.0       0.0
 0.0
 2070    1       0.0       0.0       0.0       0.0       0.0       0.0       0.0
 0.0
 2071    1       0.0       0.0       0.0       0.0       0.0       0.0       0.0
 0.0
 2072    1       0.0       0.0       0.0       0.0       0.0       0.0       0.0
 0.0
 2073    1       0.0       0.0       0.0       0.0       0.0       0.0       0.0
 0.0
 2074    1       0.0       0.0       0.0       0.0      19.0       0.0       0.0
 0.0


DO_SOM_DELAY_COSTS
*Year  Mode     Business        Commuting       Other   Freight


BENEFIT_CHANGE
*% change p.a.
*Start_yr   End_yr   Submode ChangePer1 ChangePer2 ChangePer3 ChangePer4 ChangePer5

USER_CLASSES
*no.             Veh/submode     purpose        person_type
   1              1               2              0
   2              1               1              0
   3              1               3              0
   4              2               0              0
   5              3               0              0
   6              4               0              0
   7              5               0              0

INPUT_MATRICES
*  no.   userclasses         timeslice         type         format  scenario year
factor   filename
1       1       1       V       2       0       2022    1       C:\PWD\Matrices
\AM_2022_DM_UC1.TXT
2       2       1       V       2       0       2022    1       C:\PWD\Matrices
\AM_2022_DM_UC2.TXT
3       3       1       V       2       0       2022    1       C:\PWD\Matrices
\AM_2022_DM_UC3.TXT
4       4       1       V       2       0       2022    0.12    C:\PWD\Matrices
\AM_2022_DM_UC4.TXT
5       5       1       V       2       0       2022    0.88    C:\PWD\Matrices
\AM_2022_DM_UC4.TXT
6       6       1       V       2       0       2022    0.24    C:\PWD\Matrices
\AM_2022_DM_UC5.TXT
7       7       1       V       2       0       2022    0.27    C:\PWD\Matrices
\AM_2022_DM_UC5.TXT
8       1       2       V       2       0       2022    1       C:\PWD\Matrices
\PM_2022_DM_UC1.TXT
9       2       2       V       2       0       2022    1       C:\PWD\Matrices
\PM_2022_DM_UC2.TXT
10      3       2       V       2       0       2022    1       C:\PWD\Matrices
\PM_2022_DM_UC3.TXT
11      4       2       V       2       0       2022    0.12    C:\PWD\Matrices
\PM_2022_DM_UC4.TXT
12      5       2       V       2       0       2022    0.88    C:\PWD\Matrices
\PM_2022_DM_UC4.TXT
13      6       2       V       2       0       2022    0.24    C:\PWD\Matrices
\PM_2022_DM_UC5.TXT
14      7       2       V       2       0       2022    0.27    C:\PWD\Matrices
```

```
\PM_2022_DM_UC5.TXT
15      1       3       V       2       0       2022    1       C:\PWD\Matrices
\IP_2022_DM_UC1.TXT
16      2       3       V       2       0       2022    1       C:\PWD\Matrices
\IP_2022_DM_UC2.TXT
17      3       3       V       2       0       2022    1       C:\PWD\Matrices
\IP_2022_DM_UC3.TXT
18      4       3       V       2       0       2022    0.12    C:\PWD\Matrices
\IP_2022_DM_UC4.TXT
19      5       3       V       2       0       2022    0.88    C:\PWD\Matrices
\IP_2022_DM_UC4.TXT
20      6       3       V       2       0       2022    0.24    C:\PWD\Matrices
\IP_2022_DM_UC5.TXT
21      7       3       V       2       0       2022    0.27    C:\PWD\Matrices
\IP_2022_DM_UC5.TXT
22      1       4       V       2       0       2022    1       C:\PWD\Matrices
\IP_2022_DM_UC1.TXT
23      2       4       V       2       0       2022    1       C:\PWD\Matrices
\IP_2022_DM_UC2.TXT
24      3       4       V       2       0       2022    1       C:\PWD\Matrices
\IP_2022_DM_UC3.TXT
25      4       4       V       2       0       2022    0.12    C:\PWD\Matrices
\IP_2022_DM_UC4.TXT
26      5       4       V       2       0       2022    0.88    C:\PWD\Matrices
\IP_2022_DM_UC4.TXT
27      6       4       V       2       0       2022    0.24    C:\PWD\Matrices
\IP_2022_DM_UC5.TXT
28      7       4       V       2       0       2022    0.27    C:\PWD\Matrices
\IP_2022_DM_UC5.TXT
29      1       5       V       2       0       2022    1       C:\PWD\Matrices
\IP_2022_DM_UC1.TXT
30      2       5       V       2       0       2022    1       C:\PWD\Matrices
\IP_2022_DM_UC2.TXT
31      3       5       V       2       0       2022    1       C:\PWD\Matrices
\IP_2022_DM_UC3.TXT
32      4       5       V       2       0       2022    0.12    C:\PWD\Matrices
\IP_2022_DM_UC4.TXT
33      5       5       V       2       0       2022    0.88    C:\PWD\Matrices
\IP_2022_DM_UC4.TXT
34      6       5       V       2       0       2022    0.24    C:\PWD\Matrices
\IP_2022_DM_UC5.TXT
35      7       5       V       2       0       2022    0.27    C:\PWD\Matrices
\IP_2022_DM_UC5.TXT
36      1       1       V       2       0       2037    1       C:\PWD\Matrices
\AM_2037_DM_UC1.TXT
37      2       1       V       2       0       2037    1       C:\PWD\Matrices
\AM_2037_DM_UC2.TXT
38      3       1       V       2       0       2037    1       C:\PWD\Matrices
\AM_2037_DM_UC3.TXT
39      4       1       V       2       0       2037    0.12    C:\PWD\Matrices
\AM_2037_DM_UC4.TXT
40      5       1       V       2       0       2037    0.88    C:\PWD\Matrices
\AM_2037_DM_UC4.TXT
41      6       1       V       2       0       2037    0.24    C:\PWD\Matrices
\AM_2037_DM_UC5.TXT
42      7       1       V       2       0       2037    0.27    C:\PWD\Matrices
\AM_2037_DM_UC5.TXT
43      1       2       V       2       0       2037    1       C:\PWD\Matrices
\PM_2037_DM_UC1.TXT
44      2       2       V       2       0       2037    1       C:\PWD\Matrices
\PM_2037_DM_UC2.TXT
45      3       2       V       2       0       2037    1       C:\PWD\Matrices
\PM_2037_DM_UC3.TXT
46      4       2       V       2       0       2037    0.12    C:\PWD\Matrices
\PM_2037_DM_UC4.TXT
47      5       2       V       2       0       2037    0.88    C:\PWD\Matrices
\PM_2037_DM_UC4.TXT
```

```
48      6       2       V       2       0       2037    0.24    C:\PWD\Matrices
\PM_2037_DM_UC5.TXT
49      7       2       V       2       0       2037    0.27    C:\PWD\Matrices
\PM_2037_DM_UC5.TXT
50      1       3       V       2       0       2037    1       C:\PWD\Matrices
\IP_2037_DM_UC1.TXT
51      2       3       V       2       0       2037    1       C:\PWD\Matrices
\IP_2037_DM_UC2.TXT
52      3       3       V       2       0       2037    1       C:\PWD\Matrices
\IP_2037_DM_UC3.TXT
53      4       3       V       2       0       2037    0.12    C:\PWD\Matrices
\IP_2037_DM_UC4.TXT
54      5       3       V       2       0       2037    0.88    C:\PWD\Matrices
\IP_2037_DM_UC4.TXT
55      6       3       V       2       0       2037    0.24    C:\PWD\Matrices
\IP_2037_DM_UC5.TXT
56      7       3       V       2       0       2037    0.27    C:\PWD\Matrices
\IP_2037_DM_UC5.TXT
57      1       4       V       2       0       2037    1       C:\PWD\Matrices
\IP_2037_DM_UC1.TXT
58      2       4       V       2       0       2037    1       C:\PWD\Matrices
\IP_2037_DM_UC2.TXT
59      3       4       V       2       0       2037    1       C:\PWD\Matrices
\IP_2037_DM_UC3.TXT
60      4       4       V       2       0       2037    0.12    C:\PWD\Matrices
\IP_2037_DM_UC4.TXT
61      5       4       V       2       0       2037    0.88    C:\PWD\Matrices
\IP_2037_DM_UC4.TXT
62      6       4       V       2       0       2037    0.24    C:\PWD\Matrices
\IP_2037_DM_UC5.TXT
63      7       4       V       2       0       2037    0.27    C:\PWD\Matrices
\IP_2037_DM_UC5.TXT
64      1       5       V       2       0       2037    1       C:\PWD\Matrices
\IP_2037_DM_UC1.TXT
65      2       5       V       2       0       2037    1       C:\PWD\Matrices
\IP_2037_DM_UC2.TXT
66      3       5       V       2       0       2037    1       C:\PWD\Matrices
\IP_2037_DM_UC3.TXT
67      4       5       V       2       0       2037    0.12    C:\PWD\Matrices
\IP_2037_DM_UC4.TXT
68      5       5       V       2       0       2037    0.88    C:\PWD\Matrices
\IP_2037_DM_UC4.TXT
69      6       5       V       2       0       2037    0.24    C:\PWD\Matrices
\IP_2037_DM_UC5.TXT
70      7       5       V       2       0       2037    0.27    C:\PWD\Matrices
\IP_2037_DM_UC5.TXT
71      1       1       V       2       0       2042    1       C:\PWD\Matrices
\AM_2042_DM_UC1.TXT
72      2       1       V       2       0       2042    1       C:\PWD\Matrices
\AM_2042_DM_UC2.TXT
73      3       1       V       2       0       2042    1       C:\PWD\Matrices
\AM_2042_DM_UC3.TXT
74      4       1       V       2       0       2042    0.12    C:\PWD\Matrices
\AM_2042_DM_UC4.TXT
75      5       1       V       2       0       2042    0.88    C:\PWD\Matrices
\AM_2042_DM_UC4.TXT
76      6       1       V       2       0       2042    0.24    C:\PWD\Matrices
\AM_2042_DM_UC5.TXT
77      7       1       V       2       0       2042    0.27    C:\PWD\Matrices
\AM_2042_DM_UC5.TXT
78      1       2       V       2       0       2042    1       C:\PWD\Matrices
\PM_2042_DM_UC1.TXT
79      2       2       V       2       0       2042    1       C:\PWD\Matrices
\PM_2042_DM_UC2.TXT
80      3       2       V       2       0       2042    1       C:\PWD\Matrices
\PM_2042_DM_UC3.TXT
81      4       2       V       2       0       2042    0.12    C:\PWD\Matrices
```

```
\PM_2042_DM_UC4.TXT
82      5       2       V       2       0       2042    0.88    C:\PWD\Matrices
\PM_2042_DM_UC4.TXT
83      6       2       V       2       0       2042    0.24    C:\PWD\Matrices
\PM_2042_DM_UC5.TXT
84      7       2       V       2       0       2042    0.27    C:\PWD\Matrices
\PM_2042_DM_UC5.TXT
85      1       3       V       2       0       2042    1       C:\PWD\Matrices
\IP_2042_DM_UC1.TXT
86      2       3       V       2       0       2042    1       C:\PWD\Matrices
\IP_2042_DM_UC2.TXT
87      3       3       V       2       0       2042    1       C:\PWD\Matrices
\IP_2042_DM_UC3.TXT
88      4       3       V       2       0       2042    0.12    C:\PWD\Matrices
\IP_2042_DM_UC4.TXT
89      5       3       V       2       0       2042    0.88    C:\PWD\Matrices
\IP_2042_DM_UC4.TXT
90      6       3       V       2       0       2042    0.24    C:\PWD\Matrices
\IP_2042_DM_UC5.TXT
91      7       3       V       2       0       2042    0.27    C:\PWD\Matrices
\IP_2042_DM_UC5.TXT
92      1       4       V       2       0       2042    1       C:\PWD\Matrices
\IP_2042_DM_UC1.TXT
93      2       4       V       2       0       2042    1       C:\PWD\Matrices
\IP_2042_DM_UC2.TXT
94      3       4       V       2       0       2042    1       C:\PWD\Matrices
\IP_2042_DM_UC3.TXT
95      4       4       V       2       0       2042    0.12    C:\PWD\Matrices
\IP_2042_DM_UC4.TXT
96      5       4       V       2       0       2042    0.88    C:\PWD\Matrices
\IP_2042_DM_UC4.TXT
97      6       4       V       2       0       2042    0.24    C:\PWD\Matrices
\IP_2042_DM_UC5.TXT
98      7       4       V       2       0       2042    0.27    C:\PWD\Matrices
\IP_2042_DM_UC5.TXT
99      1       5       V       2       0       2042    1       C:\PWD\Matrices
\IP_2042_DM_UC1.TXT
100     2       5       V       2       0       2042    1       C:\PWD\Matrices
\IP_2042_DM_UC2.TXT
101     3       5       V       2       0       2042    1       C:\PWD\Matrices
\IP_2042_DM_UC3.TXT
102     4       5       V       2       0       2042    0.12    C:\PWD\Matrices
\IP_2042_DM_UC4.TXT
103     5       5       V       2       0       2042    0.88    C:\PWD\Matrices
\IP_2042_DM_UC4.TXT
104     6       5       V       2       0       2042    0.24    C:\PWD\Matrices
\IP_2042_DM_UC5.TXT
105     7       5       V       2       0       2042    0.27    C:\PWD\Matrices
\IP_2042_DM_UC5.TXT
106     1       1       V       2       1       2022    1       C:\PWD\Matrices
\AM_2022_DS_UC1.TXT
107     2       1       V       2       1       2022    1       C:\PWD\Matrices
\AM_2022_DS_UC2.TXT
108     3       1       V       2       1       2022    1       C:\PWD\Matrices
\AM_2022_DS_UC3.TXT
109     4       1       V       2       1       2022    0.12    C:\PWD\Matrices
\AM_2022_DS_UC4.TXT
110     5       1       V       2       1       2022    0.88    C:\PWD\Matrices
\AM_2022_DS_UC4.TXT
111     6       1       V       2       1       2022    0.24    C:\PWD\Matrices
\AM_2022_DS_UC5.TXT
112     7       1       V       2       1       2022    0.27    C:\PWD\Matrices
\AM_2022_DS_UC5.TXT
113     1       2       V       2       1       2022    1       C:\PWD\Matrices
\PM_2022_DS_UC1.TXT
114     2       2       V       2       1       2022    1       C:\PWD\Matrices
\PM_2022_DS_UC2.TXT
```

```
115     3       2       V       2       1       2022    1       C:\PWD\Matrices
\PM_2022_DS_UC3.TXT
116     4       2       V       2       1       2022    0.12    C:\PWD\Matrices
\PM_2022_DS_UC4.TXT
117     5       2       V       2       1       2022    0.88    C:\PWD\Matrices
\PM_2022_DS_UC4.TXT
118     6       2       V       2       1       2022    0.24    C:\PWD\Matrices
\PM_2022_DS_UC5.TXT
119     7       2       V       2       1       2022    0.27    C:\PWD\Matrices
\PM_2022_DS_UC5.TXT
120     1       3       V       2       1       2022    1       C:\PWD\Matrices
\IP_2022_DS_UC1.TXT
121     2       3       V       2       1       2022    1       C:\PWD\Matrices
\IP_2022_DS_UC2.TXT
122     3       3       V       2       1       2022    1       C:\PWD\Matrices
\IP_2022_DS_UC3.TXT
123     4       3       V       2       1       2022    0.12    C:\PWD\Matrices
\IP_2022_DS_UC4.TXT
124     5       3       V       2       1       2022    0.88    C:\PWD\Matrices
\IP_2022_DS_UC4.TXT
125     6       3       V       2       1       2022    0.24    C:\PWD\Matrices
\IP_2022_DS_UC5.TXT
126     7       3       V       2       1       2022    0.27    C:\PWD\Matrices
\IP_2022_DS_UC5.TXT
127     1       4       V       2       1       2022    1       C:\PWD\Matrices
\IP_2022_DS_UC1.TXT
128     2       4       V       2       1       2022    1       C:\PWD\Matrices
\IP_2022_DS_UC2.TXT
129     3       4       V       2       1       2022    1       C:\PWD\Matrices
\IP_2022_DS_UC3.TXT
130     4       4       V       2       1       2022    0.12    C:\PWD\Matrices
\IP_2022_DS_UC4.TXT
131     5       4       V       2       1       2022    0.88    C:\PWD\Matrices
\IP_2022_DS_UC4.TXT
132     6       4       V       2       1       2022    0.24    C:\PWD\Matrices
\IP_2022_DS_UC5.TXT
133     7       4       V       2       1       2022    0.27    C:\PWD\Matrices
\IP_2022_DS_UC5.TXT
134     1       5       V       2       1       2022    1       C:\PWD\Matrices
\IP_2022_DS_UC1.TXT
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\IP_2022_DS_UC2.TXT
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\IP_2022_DS_UC3.TXT
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\IP_2022_DS_UC4.TXT
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\IP_2022_DS_UC4.TXT
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\IP_2022_DS_UC5.TXT
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\IP_2022_DS_UC5.TXT
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\AM_2037_DS_UC2.TXT
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\AM_2037_DS_UC4.TXT
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\AM_2037_DS_UC4.TXT
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\AM_2037_DS_UC5.TXT
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\AM_2037_DS_UC5.TXT
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\PM_2037_DS_UC4.TXT
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\IP_2037_DS_UC4.TXT
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\IP_2037_DS_UC4.TXT
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\IP_2037_DS_UC5.TXT
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\DM_2042_IP_TIME5.TXT
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\DM_2042_IP_TIME3.TXT
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\DM_2042_IP_DIST1.TXT
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\DM_2042_IP_DIST2.TXT
514     3       4       D       2       0       2042    0.001   C:\PWD\Matrices
\DM_2042_IP_DIST3.TXT
515     4       4       D       2       0       2042    0.001   C:\PWD\Matrices
\DM_2042_IP_DIST4.TXT
516     5       4       D       2       0       2042    0.001   C:\PWD\Matrices
\DM_2042_IP_DIST4.TXT
```

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517     6       4       D       2       0       2042    0.001   C:\PWD\Matrices
\DM_2042_IP_DIST5.TXT
518     7       4       D       2       0       2042    0.001   C:\PWD\Matrices
\DM_2042_IP_DIST5.TXT
519     1       5       D       2       0       2042    0.001   C:\PWD\Matrices
\DM_2042_IP_DIST1.TXT
520     2       5       D       2       0       2042    0.001   C:\PWD\Matrices
\DM_2042_IP_DIST2.TXT
521     3       5       D       2       0       2042    0.001   C:\PWD\Matrices
\DM_2042_IP_DIST3.TXT
522     4       5       D       2       0       2042    0.001   C:\PWD\Matrices
\DM_2042_IP_DIST4.TXT
523     5       5       D       2       0       2042    0.001   C:\PWD\Matrices
\DM_2042_IP_DIST4.TXT
524     6       5       D       2       0       2042    0.001   C:\PWD\Matrices
\DM_2042_IP_DIST5.TXT
525     7       5       D       2       0       2042    0.001   C:\PWD\Matrices
\DM_2042_IP_DIST5.TXT
526     1       1       D       2       1       2022    0.001   C:\PWD\Matrices
\DS_2022_AM_DIST1.TXT
527     2       1       D       2       1       2022    0.001   C:\PWD\Matrices
\DS_2022_AM_DIST2.TXT
528     3       1       D       2       1       2022    0.001   C:\PWD\Matrices
\DS_2022_AM_DIST3.TXT
529     4       1       D       2       1       2022    0.001   C:\PWD\Matrices
\DS_2022_AM_DIST4.TXT
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\DS_2022_AM_DIST4.TXT
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\DS_2022_AM_DIST5.TXT
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\DS_2022_AM_DIST5.TXT
533     1       2       D       2       1       2022    0.001   C:\PWD\Matrices
\DS_2022_PM_DIST1.TXT
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\DS_2022_PM_DIST2.TXT
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\DS_2022_PM_DIST3.TXT
536     4       2       D       2       1       2022    0.001   C:\PWD\Matrices
\DS_2022_PM_DIST4.TXT
537     5       2       D       2       1       2022    0.001   C:\PWD\Matrices
\DS_2022_PM_DIST4.TXT
538     6       2       D       2       1       2022    0.001   C:\PWD\Matrices
\DS_2022_PM_DIST5.TXT
539     7       2       D       2       1       2022    0.001   C:\PWD\Matrices
\DS_2022_PM_DIST5.TXT
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\DS_2022_IP_DIST1.TXT
541     2       3       D       2       1       2022    0.001   C:\PWD\Matrices
\DS_2022_IP_DIST2.TXT
542     3       3       D       2       1       2022    0.001   C:\PWD\Matrices
\DS_2022_IP_DIST3.TXT
543     4       3       D       2       1       2022    0.001   C:\PWD\Matrices
\DS_2022_IP_DIST4.TXT
544     5       3       D       2       1       2022    0.001   C:\PWD\Matrices
\DS_2022_IP_DIST4.TXT
545     6       3       D       2       1       2022    0.001   C:\PWD\Matrices
\DS_2022_IP_DIST5.TXT
546     7       3       D       2       1       2022    0.001   C:\PWD\Matrices
\DS_2022_IP_DIST5.TXT
547     1       4       D       2       1       2022    0.001   C:\PWD\Matrices
\DS_2022_IP_DIST1.TXT
548     2       4       D       2       1       2022    0.001   C:\PWD\Matrices
\DS_2022_IP_DIST2.TXT
549     3       4       D       2       1       2022    0.001   C:\PWD\Matrices
\DS_2022_IP_DIST3.TXT
550     4       4       D       2       1       2022    0.001   C:\PWD\Matrices
```

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\DS_2022_IP_DIST4.TXT
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\DS_2022_IP_DIST4.TXT
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\DS_2022_IP_DIST5.TXT
553     7       4       D       2       1       2022    0.001   C:\PWD\Matrices
\DS_2022_IP_DIST5.TXT
554     1       5       D       2       1       2022    0.001   C:\PWD\Matrices
\DS_2022_IP_DIST1.TXT
555     2       5       D       2       1       2022    0.001   C:\PWD\Matrices
\DS_2022_IP_DIST2.TXT
556     3       5       D       2       1       2022    0.001   C:\PWD\Matrices
\DS_2022_IP_DIST3.TXT
557     4       5       D       2       1       2022    0.001   C:\PWD\Matrices
\DS_2022_IP_DIST4.TXT
558     5       5       D       2       1       2022    0.001   C:\PWD\Matrices
\DS_2022_IP_DIST4.TXT
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\DS_2022_IP_DIST5.TXT
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\DS_2022_IP_DIST5.TXT
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\DS_2037_AM_DIST1.TXT
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\DS_2037_AM_DIST2.TXT
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\DS_2037_AM_DIST3.TXT
564     4       1       D       2       1       2037    0.001   C:\PWD\Matrices
\DS_2037_AM_DIST4.TXT
565     5       1       D       2       1       2037    0.001   C:\PWD\Matrices
\DS_2037_AM_DIST4.TXT
566     6       1       D       2       1       2037    0.001   C:\PWD\Matrices
\DS_2037_AM_DIST5.TXT
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\DS_2037_AM_DIST5.TXT
568     1       2       D       2       1       2037    0.001   C:\PWD\Matrices
\DS_2037_PM_DIST1.TXT
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\DS_2037_PM_DIST2.TXT
570     3       2       D       2       1       2037    0.001   C:\PWD\Matrices
\DS_2037_PM_DIST3.TXT
571     4       2       D       2       1       2037    0.001   C:\PWD\Matrices
\DS_2037_PM_DIST4.TXT
572     5       2       D       2       1       2037    0.001   C:\PWD\Matrices
\DS_2037_PM_DIST4.TXT
573     6       2       D       2       1       2037    0.001   C:\PWD\Matrices
\DS_2037_PM_DIST5.TXT
574     7       2       D       2       1       2037    0.001   C:\PWD\Matrices
\DS_2037_PM_DIST5.TXT
575     1       3       D       2       1       2037    0.001   C:\PWD\Matrices
\DS_2037_IP_DIST1.TXT
576     2       3       D       2       1       2037    0.001   C:\PWD\Matrices
\DS_2037_IP_DIST2.TXT
577     3       3       D       2       1       2037    0.001   C:\PWD\Matrices
\DS_2037_IP_DIST3.TXT
578     4       3       D       2       1       2037    0.001   C:\PWD\Matrices
\DS_2037_IP_DIST4.TXT
579     5       3       D       2       1       2037    0.001   C:\PWD\Matrices
\DS_2037_IP_DIST4.TXT
580     6       3       D       2       1       2037    0.001   C:\PWD\Matrices
\DS_2037_IP_DIST5.TXT
581     7       3       D       2       1       2037    0.001   C:\PWD\Matrices
\DS_2037_IP_DIST5.TXT
582     1       4       D       2       1       2037    0.001   C:\PWD\Matrices
\DS_2037_IP_DIST1.TXT
583     2       4       D       2       1       2037    0.001   C:\PWD\Matrices
\DS_2037_IP_DIST2.TXT
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584     3       4       D       2       1       2037    0.001   C:\PWD\Matrices
\DS_2037_IP_DIST3.TXT
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\DS_2037_IP_DIST4.TXT
586     5       4       D       2       1       2037    0.001   C:\PWD\Matrices
\DS_2037_IP_DIST4.TXT
587     6       4       D       2       1       2037    0.001   C:\PWD\Matrices
\DS_2037_IP_DIST5.TXT
588     7       4       D       2       1       2037    0.001   C:\PWD\Matrices
\DS_2037_IP_DIST5.TXT
589     1       5       D       2       1       2037    0.001   C:\PWD\Matrices
\DS_2037_IP_DIST1.TXT
590     2       5       D       2       1       2037    0.001   C:\PWD\Matrices
\DS_2037_IP_DIST2.TXT
591     3       5       D       2       1       2037    0.001   C:\PWD\Matrices
\DS_2037_IP_DIST3.TXT
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\DS_2037_IP_DIST4.TXT
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\DS_2037_IP_DIST4.TXT
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\DS_2037_IP_DIST5.TXT
595     7       5       D       2       1       2037    0.001   C:\PWD\Matrices
\DS_2037_IP_DIST5.TXT
596     1       1       D       2       1       2042    0.001   C:\PWD\Matrices
\DS_2042_AM_DIST1.TXT
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\DS_2042_AM_DIST2.TXT
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\DS_2042_AM_DIST3.TXT
599     4       1       D       2       1       2042    0.001   C:\PWD\Matrices
\DS_2042_AM_DIST4.TXT
600     5       1       D       2       1       2042    0.001   C:\PWD\Matrices
\DS_2042_AM_DIST4.TXT
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\DS_2042_AM_DIST5.TXT
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\DS_2042_AM_DIST5.TXT
603     1       2       D       2       1       2042    0.001   C:\PWD\Matrices
\DS_2042_PM_DIST1.TXT
604     2       2       D       2       1       2042    0.001   C:\PWD\Matrices
\DS_2042_PM_DIST2.TXT
605     3       2       D       2       1       2042    0.001   C:\PWD\Matrices
\DS_2042_PM_DIST3.TXT
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\DS_2042_PM_DIST4.TXT
607     5       2       D       2       1       2042    0.001   C:\PWD\Matrices
\DS_2042_PM_DIST4.TXT
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\DS_2042_PM_DIST5.TXT
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\DS_2042_PM_DIST5.TXT
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\DS_2042_IP_DIST1.TXT
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\DS_2042_IP_DIST2.TXT
612     3       3       D       2       1       2042    0.001   C:\PWD\Matrices
\DS_2042_IP_DIST3.TXT
613     4       3       D       2       1       2042    0.001   C:\PWD\Matrices
\DS_2042_IP_DIST4.TXT
614     5       3       D       2       1       2042    0.001   C:\PWD\Matrices
\DS_2042_IP_DIST4.TXT
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\DS_2042_IP_DIST5.TXT
616     7       3       D       2       1       2042    0.001   C:\PWD\Matrices
\DS_2042_IP_DIST5.TXT
617     1       4       D       2       1       2042    0.001   C:\PWD\Matrices
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\DS_2042_IP_DIST1.TXT
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\DS_2042_IP_DIST2.TXT
619     3       4       D       2       1       2042    0.001   C:\PWD\Matrices
\DS_2042_IP_DIST3.TXT
620     4       4       D       2       1       2042    0.001   C:\PWD\Matrices
\DS_2042_IP_DIST4.TXT
621     5       4       D       2       1       2042    0.001   C:\PWD\Matrices
\DS_2042_IP_DIST4.TXT
622     6       4       D       2       1       2042    0.001   C:\PWD\Matrices
\DS_2042_IP_DIST5.TXT
623     7       4       D       2       1       2042    0.001   C:\PWD\Matrices
\DS_2042_IP_DIST5.TXT
624     1       5       D       2       1       2042    0.001   C:\PWD\Matrices
\DS_2042_IP_DIST1.TXT
625     2       5       D       2       1       2042    0.001   C:\PWD\Matrices
\DS_2042_IP_DIST2.TXT
626     3       5       D       2       1       2042    0.001   C:\PWD\Matrices
\DS_2042_IP_DIST3.TXT
627     4       5       D       2       1       2042    0.001   C:\PWD\Matrices
\DS_2042_IP_DIST4.TXT
628     5       5       D       2       1       2042    0.001   C:\PWD\Matrices
\DS_2042_IP_DIST4.TXT
629     6       5       D       2       1       2042    0.001   C:\PWD\Matrices
\DS_2042_IP_DIST5.TXT
630     7       5       D       2       1       2042    0.001   C:\PWD\Matrices
\DS_2042_IP_DIST5.TXT
631     1       x       R       2       X       XXXX    0.001   C:\PWD\Matrices
\AM_BASE_NET_DIST1.TXT
632     2       x       R       2       X       XXXX    0.001   C:\PWD\Matrices
\AM_BASE_NET_DIST2.TXT
633     3       x       R       2       X       XXXX    0.001   C:\PWD\Matrices
\AM_BASE_NET_DIST3.TXT
634     4       x       R       2       X       XXXX    0.001   C:\PWD\Matrices
\AM_BASE_NET_DIST4.TXT
635     5       x       R       2       X       XXXX    0.001   C:\PWD\Matrices
\AM_BASE_NET_DIST4.TXT
636     6       x       R       2       X       XXXX    0.001   C:\PWD\Matrices
\AM_BASE_NET_DIST5.TXT
637     7       x       R       2       X       XXXX    0.001   C:\PWD\Matrices
\AM_BASE_NET_DIST5.TXT



SECTORS
*mode   Sector_file_name
   1    C:\PWD\Sectors List.txt
```