APPENDIX 6
Economic Impact of Housing Development

1. INTRODUCTION

1.1.1. The purpose of the memo is to summarise the analysis of land development in the Edgar Street Grid (ESG) and how land intended for residential development will be 'unlocked' with the City Link Road (CLR) being constructed.

1.1.2. Based on the latest DfT WebTAG guidance, this assessment looks at the extent of the 'economic benefit' that can be derived from unlocking of land for residential development (and thus contributes to the economic appraisal of the scheme).

1.1.3. The overriding approach has been to base the analysis on the guidance in WebTAG and to ensure that it relates to the traffic modelling and economic appraisal work undertaken. As pointed out below, although the benefits of dependent housing unlocked by a transport scheme should not be included in the NPV and BCR calculations, they should be included within the economic appraisal report.

1.1.4. These benefits are now permissible in economic appraisal reports as the surplus of residential land value over existing land values is a major component of the welfare gain to society arising from a planning decision in favour of residential use.

2. BRIEF SUMMARY OF WEBTAG UNIT A2.3

2.1.1. A relatively recent (January 2014) addition to the "wider economic impacts" suite of guidance within WebTAG, Unit A2.3 covers the assessment of economic benefits generated by transport in the context of dependent development. Although the guidance is primarily aimed at residential development, it can be adopted for other land uses.

2.1.2. In the context of the CLR, a large proportion of the proposed residential development in the Edgar Street Grid will only be able go ahead if the CLR is constructed. The CLR thus provides the necessary transport access to the new development.

2.1.3. The guidance that sets out how the analysis should be reported is summarised below:

- The report should set out the criteria used for 'dependency testing' as well as identification of the transport schemes;
- The report should also show the number of homes (together with their hectarage) unlocked by the transport scheme;
- Using the tool developed by DfT, the report should set out:
    1. Existing and residential land values;
    2. The value used for external benefits of undeveloped land;
    3. The value of external transport costs; and
    4. The net benefit of the dependent housing.

2.1.4. Although Unit A2.3 (and the accompanying evaluation tool) contains 'default' land values, local (Hereford) values have been obtained and used for this analysis.

2.1.5. Whilst the results cannot be included within the NPV and BCR calculations, the estimated benefits of dependent housing unlocked by the transport scheme are considered in the Value for Money case to reach the overall assessment of Value of Money of the transport scheme.

2.1.6. In addition, a qualitative assessment score should be reported depending on the estimated value of the benefits of the dependent development unlocked by the transport scheme and should follow the guidelines set out in Unit A2.3.

3. SUMMARY OF WEBTAG VALUATION MODEL

3.1.1. As part of its WebTAG guidance, DfT has developed a valuation model to estimate the value of a housing development identified as dependent on a given transport scheme.

3.1.2. There are three key elements to the model:

1. Residential land value: based on hectarage of dependent housing x residential land value per hectare
2. Existing land use value: based on hectarage of dependent housing x per hectare value of land in existing use
3. Net external impact of housing development: based on hectarage of dependent housing x per hectare external impact of development

3.1.3. Step 3 is worth discussing here as it also incorporates the "external impact" of the dependent development scheme.

3.1.4. The external impact refers to the change in impacts due to the change in land use and as stated in WebTAG, the model draws upon estimates of the external benefits of undeveloped land (see Table 7.10 of the ODPM study, Valuing the External Benefits of Undeveloped Land). Note that depending on the type of change in land use, these net external impacts can be either positive or negative in the case of Hereford, they are positive as the new development will include improved urban realm and improved amenity / public space as well as the residential housing development.

3.1.5. The **external impacts** therefore include the change in benefits such as amenity and recreational space gains once the land is developed for its new use. The model employs the mean average of the reported estimates of external benefits of different types of land (obtained from the ODPM study).

3.1.6. Although the **transport-related external impacts** are not included within the model, these should be added to the non-transport external impacts discussed above to give total external impacts. Note that this task has been undertaken separately as part of the TUBA analysis.

4. INPUT DATA ASSUMPTIONS

4.1.1. The data used in the model is described below.

4.2. Land Values

4.2.1. Two sets of land values were obtained from Herefordshire Council:

1. Existing land value: based on mixed uses (ranging from a relatively 'high value' public car park to a relatively 'low value' undeveloped land near the Essex Arms in the ESG), an average land value of £350,000 per acre (£864,850 per hectare) has been assumed;

2. Residential land value: based on typical values of city centre residential land (derived from a recent, i.e. February 2015, District Value report and recent Herefordshire Council marketing), an average value of £670,000 per acre (£1,655,570 per hectare) has been assumed.

4.3. Extent of Residential Development Area

4.3.1. The amount of new residential land that will be dependent on the CLR is based on the following assumptions:

- The "Urban Village" area (where the new residential developments will be situated) comprises approximately 60 acres (25 hectares, 60% of the total ESG area); and
- Of this, 24 acres (10 hectares, 40% of the 60 acres / 252 hectares) will be net residential land scheduled for development;

4.3.2. The assumption therefore is that the residential development on these 24 acres (10 hectares) of land will be dependent on the CLR.

4.4. External Impact Values

4.4.1. As discussed above, there are two elements to this:

1. External Impacts (change in amenity, recreational space etc.): the values used are taken from WebTAG Unit A2.3 (appraisal tool) and represent the difference between the "Urban Fringe" value (£236,620 per hectare *in perpetuity*) and the "Urban Core" value (£14,282,000 per hectare *in perpetuity*).

- The 'urban fringe' category is appropriate for existing land use in the ESG as this represents urban fringe areas where there is transition between an urban area and a less well built up area. Similarly, the 'urban core' category is appropriate as this represents public spaces and city park-type uses in central urban areas. Based on the values above, the *net* externality benefit in perpetuity is £14,045,380 per hectare (2010 prices);

2. External transport-related impacts: these values have been taken directly from the TUBA work undertaken for the transport economics appraisal. The values derived from this work represent impacts such as monetised journey time differences and changes in vehicle operating costs. The external cost to transport users isolates the expected marginal impact on existing users of the highway network if trips from the proposed development are introduced.

5. RESULTS

5.1.1. Based on use of the DfT tool, the results show that the 'unlocked' development in the ESG will generate over £147.4 million of benefits. This comprises £6.9 million of benefits associated with the land value gain as well as £140.5 million of benefits associated with the change in land use and the availability of more public space, better amenity and improved urban realm.

5.1.2. The marginal transport impact in the opening year is estimated at £1.01 million (at 2010 prices), resulting in a cumulative external transport cost over 60 years of £60.7 million.

5.1.3. Overall the proposed scheme is estimated to provide a net regeneration benefit of £86.6 million. It is therefore considered that the HCCTP scheme is likely to have a *Moderate Beneficial* impact on Regeneration.

Department for Transport

Valuing Housing Impacts Workbook

TAG Reference

TAG Unit A2.3 - Transport Appraisal in the Context of Dependent Development

Notes

Please refer to the 'Introduction' sheet for instructions on how to use this workbook.

Version Control

Date	Description
Jan-14	Definitive release
17/10/2013	Release of restructured guidance

Contact

Transport Appraisal and Strategic Modelling (TASM) Division
Department for Transport
Zone 2/25 Great Minster House
33 Horseferry Road
London
SW1P 4DR
tasm@dft.gsi.gov.uk
Tel 020 7944 6176
Fax 020 7944 2198

VALUATION OF HOUSING IMPACTS MODEL

Introduction

This spreadsheet has been created to assist with valuing the impacts of new housing development that has been identified as dependent on a transport intervention.
It should be used in conjunction with guidance set out in WebTAG Unit 2.3 "Transport Appraisal in the Context of Dependent Development".
The spreadsheet has been provided only to illustrate how the valuation method set out in that WebTAG Unit can be applied.

The impact should be valued by calculating both the private benefit associated with the change in land use when planning permission is granted, and the wider external impact of the development.

The workbook has three worksheets:

Calculations	This worksheet should be used to calculate the net benefit of specific housing developments using the values given in the other worksheets
Land Values	Residential, agricultural and industrial land values for regions and areas within regions are provided on this sheet.
Externality values	Externality cost of developing on different land types are provided on this sheet.

Instructions for use

Data Inputs

Where there is no need to change default inputs on land values and externality values, users only need to input the details of particular schemes in the Calculations worksheet.
The following information is required

Scheme name

Region - selected from Land Values Sheet

Location - selected from Land Values sheet

Land Type - selected from Externality Values sheet

Value of land in residential use - selected from Land Values sheet. This should correspond with the selected Region and Location

Value of land in existing use (agricultural or industrial) - selected from Land Values sheet. This should correspond with the selected Region and Location

Externality Value (perpetuity value) - selected from the Externality Values sheet. This should be the perpetuity value that corresponds to the selected land type.

Hectarage of dependent housing development

Users are encouraged to draw upon alternative sources of evidence to inform estimation of land values and of externality values.

Calculations and Outputs

The Calculations Sheet uses the data input identified above to calculate the following which are then reported in Columns J to L of the Calculations sheet.

Net private value of housing = residential land value - existing land use value

Net external impact of housing = Externality value

Net social value of housing = net private value of housing + net external impact of housing development

Net private value of housing = residential land value - existing land use value

Net social value of housing = net private value of housing + net external impact of housing development

Project Details				2010 prices Land Details				2010 prices Calculations		
Scheme Name	Region	Location	Land Type	Value of land in residential use (£'000)	Value of land in existing use (Agricultural or Industrial) (£'000)	Externality Value (Perpetuity Value) (£'000)	Hecterage of dependent housing development / Hecterage of land benefitting from urban realm + public space improvements	Net private value of housing (£'000)	Net External impact of housing (£'000)	Net Social Value of housing (£'000)
Hereford Edgar Street Grid	Herefordshire	Hereford	Urban	£1,446	£755	£14,045	10	£6,906	£140,454	£147,360
								0	0	0
								0	0	0
								0	0	0
								0	0	0
								0	0	0
								0	0	0
								0	0	0

Land Values

Residential Land (£'000 per ha)
Source: VOA Property Market Report 2011
Values are for the residential land market in the year to January 2011

Region	Location	Value
South West	Bristol	2,100
	Plymouth	1,500
South East	Southampton	1,700
	Reading	2,750
	Oxford	4,000
	Medway Towns	1,400
East	Norwich	1,600
	Cambridge	2,900
East Midlands	Nottingham	1,200
	Leicester	1,580
West Midlands	Birmingham	1,235
	Stoke	775
Yorkshire and Humberside	Leeds	1,360
	Sheffield	1,330
North East	Newcastle	1,280
North West	Liverpool	1,500
	Manchester	1,350
Wales	Cardiff	2,750
	Wrexham	850
Scotland	Aberdeen	2,100
	Glasgow	850
	Edinburgh	2,200
London Outer	Ealing	4,800
	Croydon	4,700
	Romford	3,125
	Enfield	4,150
Northern Ireland	Belfast	1,250

Agricultural Land - Current Use Values (£'000 per ha)
Source: VOA Property Market Report 2011

Region	Location	Arable	Dairy	Mixed
East	Cambridgeshire	18.525	N/A	N/A
	Sussex	19.76	N/A	N/A
South East	Oxfordshire	20.995	20.995	20.995
	Kent	20.748	20.254	18
South West	Devon	19.143	19.76	19
	Wiltshire	18.525	18.525	18.525
West Midlands	Shropshire	19.76	19.143	19.143
	Herefordshire	21.613	20.995	20.995
East Midlands	Lincolnshire Fens	23.465	N/A	N/A
	Leicestershire	20.995	20.995	20.995
	Derbyshire	18.525	18.525	18.525
North West	Cheshire	N/A	23.465	18.525
	Cumbria	N/A	20.995	19.513
	Lancashire	N/A	16.673	17.29
Yorkshire and North East	Northumberland	15.685	12.227	12.597
	East Yorkshire	17.908	N/A	15.438
	North Yorkshire	20.995	18.525	19.76

Industrial Land (£'000 per ha)
Source: VOA Property Market Report 2011

Region	Location	Value
South West	Bristol	800
	Plymouth	400
South East	Southampton	1145
	Reading	1900
	Oxford	1000
	Medway Towns	850
East	Norwich	425
	Cambridge	740
East Midlands	Nottingham	500
	Leicester	400
West Midlands	Birmingham	650
	Stoke	300
Yorkshire and Humberside	Leeds	600
	Sheffield	495
North East	Newcastle	235
North West	Liverpool	450
	Manchester	650

Source: VOA Property Market Report 2011, Residential Building Land, (http://www.voa.gov.uk/dvs/_downloads/pmr_2011.pdf)

Note: the VOA currently publishes land valuation data for only a limited number of regions and locations, and these differ to some extent between land types. Judgement will therefore be needed when deciding on the appropriate land values to use for specific cases.

EXTERNALITIES

Land type	Value per hectare, per year (2010 prices) (£'000)	Present Value per hectare (2010 prices, perpetuity value) (£'000)	Comments
Urban Core (Public space, City Park)	£735.41	**£14,282.00**	Central Urban area: examples include public spaces and city parks.
Urban Fringe ('greenbelt')	£12.11	**£236.62**	Urban fringe: areas of transition where urban areas meet countryside.
Urban Fringe (forested land)	£36.77	**£718.64**	Forested land on urban fringes, more valuable than typical urban fringe.
Rural (forested land (amenity))	£90.24	**£1,817.71**	This value represents the range of forests in the UK, including both commercial and amenity forests.
Agricultural Land (extensive)	£42.90	**£838.42**	Areas of rough grassland where extensive agricultural practices such as sheep farming dominate. May include farm buildings forming a part of the agricultural holdings.
Agricultural Land (intensive)	£1.40	**£27.40**	This type of land is usually in farmland under intensive agriculture usually land under food production. May include farm buildings forming a part of the agricultural holdings.
Natural and semi-natural land	£90.10	**£1,817.71**	This includes uncultivated areas, wetlands, and areas with nature conservation designations.

Note: The landscape values (per year and perpetuity values) are obtained from "Valuing the External Benefits of Undeveloped Land; a review of the economic literature", ODPM, (2002). The values have been uplifed to 2010 prices using GDP deflator data published by the Office for National Statistics.

Transport External Costs assessed using TAG Unit A2.3

C.1.4 The transport external costs of a land use development can be estimated using the following equation (the derivation of this equation is set out at the end of this Appendix):

$$TEC = \sum_{ij} (c_{ij}^{1*} t_{ij}^{1} - c_{ij}^{0*} t_{ij}^{0}) - \sum_{ij} c_{ij}^{1*} t_{ij}^{D}$$

where c_{ij} and t_{ij} are, respectively, the cost per trip and the numbers of trips between zones i and j. The superscripts 1 and 0 denote the with and without land use development scenarios and the superscript D denote the matrix of trips generated by the development.

	2019	
	T0 / C0	T1 / C1
	No Dev w Sche	Dev w Scheme
Annual Matrix Total - Car (000s)	32011	32605
Annual Matrix Total - LGV (000s)	4994	5095
Annual Matrix Total - OGV (000s)	1779	1807
Annual Matrix Total (000s)	38784	39507
User Costs - Time (£000s)	25708	27107
User Costs - Fuel (£000s)	6221	6427
User Costs - Non-Fuel VOC (£000s)	4349	4451
User Costs - Total (£000s)	36278	37985
Cost per Trip (£)	0.935386	0.961475

Transport Economic Cost = (T1*C1 - T0*C0) - (T1-T0)*C1

TEC - Annual Value (£000s) 1,011.9

Until	Discount Rate		
2048	3.50%		
2200	3%	**60,711.2**	60711.21

Year	Discount Factor	External Cc	Discounted Cost (2010 £000s)
2010	1		0.0
2011	0.966183575		0.0
2012	0.9335107		0.0
2013	0.901942706		0.0
2014	0.871442228		0.0
2015	0.841973167		0.0
2016	0.813500644		0.0
2017	0.785990961		0.0
2018	0.759411556		0.0
2019	0.733730972	1,379.1	1,011.9
2020	0.708918814	1,427.3	1,011.9
2021	0.684945714	1,477.3	1,011.9
2022	0.661783298	1,529.0	1,011.9
2023	0.639404153	1,582.5	1,011.9
2024	0.61778179	1,637.9	1,011.9
2025	0.596890619	1,695.2	1,011.9
2026	0.576705912	1,754.5	1,011.9
2027	0.557203779	1,815.9	1,011.9
2028	0.53836114	1,879.5	1,011.9
2029	0.52015569	1,945.3	1,011.9
2030	0.502565884	2,013.4	1,011.9
2031	0.485570903	2,083.8	1,011.9
2032	0.469150631	2,156.8	1,011.9
2033	0.453285634	2,232.3	1,011.9
2034	0.437957134	2,310.4	1,011.9
2035	0.423146989	2,391.3	1,011.9
2036	0.408837671	2,475.0	1,011.9
2037	0.395012242	2,561.6	1,011.9
2038	0.38165434	2,651.2	1,011.9
2039	0.368748155	2,744.0	1,011.9
2040	0.356278411	2,840.1	1,011.9
2041	0.344230348	2,939.5	1,011.9
2042	0.332589709	3,042.3	1,011.9
2043	0.321342714	3,148.8	1,011.9
2044	0.310476052	3,259.0	1,011.9
2045	0.299976862	3,373.1	1,011.9
2046	0.289832717	3,491.2	1,011.9
2047	0.28003161	3,613.4	1,011.9
2048	0.270561942	3,739.8	1,011.9
2049	0.262681497	3,852.0	1,011.9
2050	0.25503058	3,967.6	1,011.9
2051	0.247602505	4,086.6	1,011.9
2052	0.240390781	4,209.2	1,011.9
2053	0.233389108	4,335.5	1,011.9
2054	0.226591367	4,465.5	1,011.9
2055	0.219991619	4,599.5	1,011.9
2056	0.213584096	4,737.5	1,011.9
2057	0.2073632	4,879.6	1,011.9
2058	0.201323495	5,026.0	1,011.9
2059	0.195459704	5,176.8	1,011.9
2060	0.189766703	5,332.1	1,011.9
2061	0.184239517	5,492.1	1,011.9
2062	0.178873318	5,656.8	1,011.9
2063	0.173663415	5,826.5	1,011.9
2064	0.168605257	6,001.3	1,011.9
2065	0.163694425	6,181.4	1,011.9
2066	0.158926626	6,366.8	1,011.9
2067	0.154297695	6,557.8	1,011.9
2068	0.149803587	6,754.5	1,011.9
2069	0.145440376	6,957.2	1,011.9
2070	0.141204249	7,165.9	1,011.9
2071	0.137091504	7,380.9	1,011.9
2072	0.133098547	7,602.3	1,011.9
2073	0.12922189	7,830.4	1,011.9
2074	0.125458146	8,065.3	1,011.9
2075	0.121804025	8,307.2	1,011.9
2076	0.118256335	8,556.4	1,011.9
2077	0.114811976	8,813.1	1,011.9
2078	0.111467938	9,077.5	1,011.9