



Allerdale Borough Council

WORKINGTON GATEWAY - LUF2

Value for Money Methodology Note





Allerdale Borough Council

WORKINGTON GATEWAY - LUF2

Value for Money Methodology Note

TYPE OF DOCUMENT (VERSION) CONFIDENTIAL

PROJECT NO. 70098307

OUR REF. NO. 001

DATE: JULY 2022

WSP

Amber Court
William Armstrong Drive
Newcastle upon Tyne
NE4 7YQ

Phone: +44 191 226 2000

Fax: +44 191 226 2104

WSP.com



QUALITY CONTROL

Issue/revision	First issue
Remarks	Final
Date	25/07/2022
Prepared by	KP
Signature	
Checked by	GE
Signature	
Authorised by	VH
Signature	
Project number	70098307
Report number	001
File reference	

CONTENTS

1	INTRODUCTION	1
1.1	PURPOSE OF THE REPORT	1
1.2	PROPOSED SCHEMES ASSESSED	1
1.3	METHODS OF ASSESSMENT	2
2	MOTORISED VEHICLE APPRAISAL: TUBA	4
2.1	INTRODUCTION	4
2.2	METHODOLOGY	4
4.1	HIGHWAY USER IMPACTS	10
5	ACTIVE MODES APPRAISAL (AMAT & ABC)	11
5.1	INTRODUCTION	11
5.2	METHODOLOGY	11
5.3	ASSUMPTIONS	17
5.4	ACTIVE MODE APPRAISAL TOOL	17
5.5	AMBIENCE BENEFIT CALCULATOR	19
5.6	ACTIVE MODE BENEFITS	20
6	SUMMARY OF RESULTS – TRANSPORT SCHEMES	22
7	HALL PARK WALLED GARDEN	23
7.1	INTRODUCTION	23
7.2	METHODOLOGY	23
8	SUMMARY OF RESULTS – WALLED GARDEN	25
9	SUMMARY OF RESULTS – COMBINED PACKAGE	26

TABLES

Table 2-1 – TUBA Parameters	5
Table 2-2 – Time Slice Parameters	6
Table 2-3 – Time Periods	6
Table 2-4 - TUBA Economics File Time Periods	7
Table 2-5 – Do Minimum Parameters	8
Table 2-6 – Do Minimum Costs	8
Table 2-7 – User Classes	9
Table 2-8 – Highway User Benefits (2022 Prices and Values)	10
Table 3-1 – Forecasted Daily Demand	13
Table 3-2 - Estimated Uplifts in Cycling Demand – Trips	15
Table 3-3 - Estimated Uplifts in Pedestrian Demand – Trips	16
Table 3-4 - Impacts Appraised Using the Active Mode Appraisal Toolkit	18
Table 3-5 - Active Mode Benefits (2022 Prices and Values)	21
Table 4-1 – Transport Scheme Analysis of Monetised Costs and Benefits (2022 Prices and Value)	22
Table 6-1 – Walled Garden Scheme Analysis of Monetised Costs and Benefits (2022 Prices and Value)	25

FIGURES

Figure 1-1 - Study Area & LUF2 Scheme Elements	2
Figure 3-1 – Straight Line Data from PCT	11

1 INTRODUCTION

1.1 PURPOSE OF THE REPORT

1.1.1. WSP was commissioned in June 2022 by Allerdale Borough Council to support with the Workington Gateway bid for the Levelling Up Fund Round 2 (LUF2). The Levelling Up Fund Prospectus was launched post-budget in March 2022. Technical guidance on bidding was followed by FAQs in early May. This new initiative commits to a £4.8bn capital fund to back regeneration and development projects around three intervention areas:

- Local transport;
- Town centre and high street regeneration; and
- Cultural and heritage assets

A Value for Money Methodology Note is required to support a successful bid. The purpose of this Note is to detail the methodology that has been undertaken in calculating the quantifiable value for money the scheme represents (the Benefit-Cost Ratio, BCR).

This report therefore sets out the process undertaken in determining the results set out in Part 5 of the LUF2 proforma: the Economic Case.

1.2 PROPOSED SCHEMES ASSESSED

1.2.1. The proposed scheme is made up of four distinct but interdependent elements, described as:

Ramsay Brow

- The scheme will widen the A66 Ramsey Brow approach to allow long vehicles (over 55-feet) to safely manoeuvre through the junction in all directions;
- The scheme will provide additional capacity through improved equipment and phasing staging made possible through the realignment; and
- This scheme will also improve pedestrian facilities at the junction.

Hall Brow Widening

- This scheme widens the existing carriageway, formalising the parking bays and creating two running lanes capable of allow two large (over 55-feet) HGVs to pass one-another;
- The scheme also includes a new controlled (Toucan) crossing point to allow a better connection between Hall Park and Black Path, a direct and desirable route to the NCN72.

Hall Park – Access and Path Network

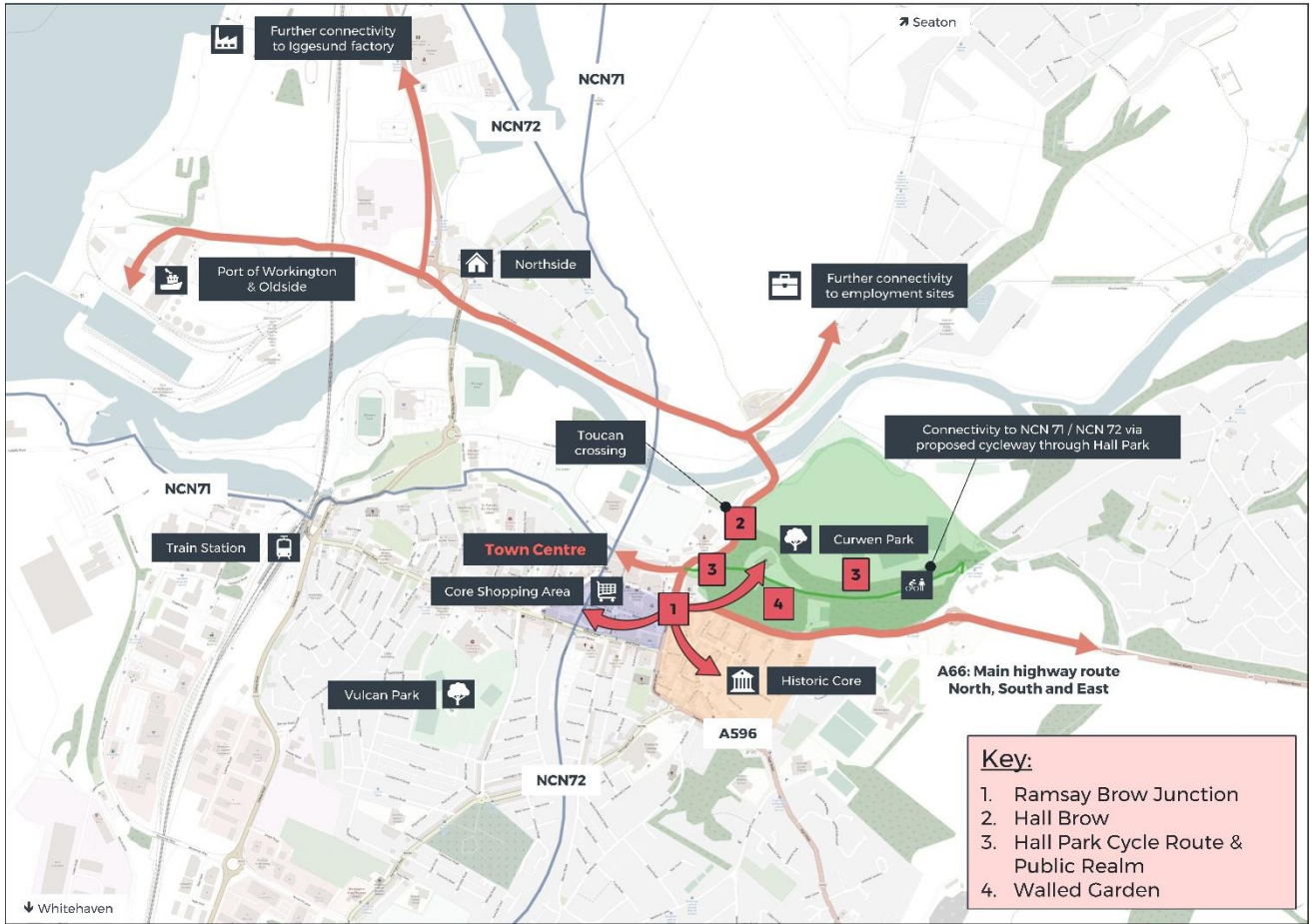
- This scheme improves the existing access points and creates a shared-use path within the park parallel to the constrained A66 / Ramsey Brow, including low-level lighting.

Hall Park Walled Garden - Social Enterprise Centre

- The Walled Garden is an underused heritage asset that will be refurbished to create a Social Enterprise Centre, helping train adults with learning disabilities, supporting local community groups and schools through the provision of horticulture activities within on-site gardening areas and wildlife areas. Providing on-the-job training in horticulture, food production and catering (via café facilities to be built within the Walled Garden), these facilities will be open to the public as a local amenity and cultural point of interest.

Figure 1-1 shows the proposed study area and highlights the four key elements of the scheme.

Figure 1-1 - Study Area & LUF2 Scheme Elements



1.3 METHODS OF ASSESSMENT

1.3.1. The following methods of assessment have been employed to capture benefits across the Transport schemes:

- The Department for Transport (DfT)'s Transport Users Benefit Appraisal (TUBA) tool has been utilised to capture benefits associated with motorised vehicles;
- The DfT's Active Mode Appraisal Toolkit (AMAT) has been utilised to capture benefits associated with walking and cycling across the proposed schemes;
- Transport for London (TfL)'s Ambience Benefits Calculator (ABC) has been utilised to capture additional benefits associated with public realm enhancements that are not ordinarily capture through other methods.

1.3.2. To assess the Hall Part Walled Garden element of the project, a variety of methods have been applied, more detail of which is provided in the Hall Park Walled Gardens methodology section. The following benefits and methods have been used:

- Direct GVA benefit has been estimated using GVA per FTE, based on the types of jobs and typical local levels of GVA associated with employment that is available from ONS data on GVA and employment.

- Green space improvements are assessed using a willingness to pay (WTP) measure that is based on a study undertaken by Fields in Trust (Revaluing Parks and Green Spaces – Measuring their economic and wellbeing value to individuals, 2019).
- The benefit of tree planting is estimated by applying a value per tree based on academic research undertaken by Place-based Climate Action Network at Queen’s University Belfast (Economic Benefits of Local Climate Action, 2021).
- Social Value benefits are calculated using HACT guidance (Measuring the Social Impact of Community Investment: A Guide to Using the Wellbeing Valuation Approach, 2014).
- Land value uplift is estimated using a mix of ONS House price and population data and Co-Star commercial property data in order to estimate the uplift in commercial and residential property prices.

2 MOTORISED VEHICLE APPRAISAL: TUBA

2.1 INTRODUCTION

- 2.1.1. This section of the Note describes the process followed to undertake scheme appraisal using the DfT's TUBA (Transport Users Benefit Appraisal) tool.
- 2.1.2. TUBA is used to quantify cost benefits in journey times, distances and number of trips split by user classes and time periods. It does this by comparing the travel times in the 'Without Scheme' scenario with those in the 'With Scheme' scenario. It then applies monetary values (known as Values of Time - VoT) to derive the monetary benefits of those time savings over a standard 60-year appraisal period.
- 2.1.3. TUBA also calculates Vehicle Operating Cost (VOC) changes which occur over the standard 60-year appraisal period, due to changes in cost associated with items such as fuel, maintenance and wear and tear.
- 2.1.4. This economic appraisal has been carried out in accordance with the DfT's Transport Analysis Guidance as set out in Unit A1-1 'Cost-Benefit Analysis' and the associated TAG Data Book (v1.13.1) published in May 2022.
- 2.1.5. Tuba 1.9.17 has been used for this appraisal.

2.2 METHODOLOGY

- 2.2.1. The TUBA process can be split down into two primary sections:
 - Tuba Input File
 - Running TUBA

TUBA INPUT FILE

The TUBA input file is the file where the defined parameters are entered as well as the input matrices that are extracted from Saturn and as such can be split down into sections:

- Parameters – This will cover some year-based parameters and naming parameters within the input file
- Time Slices & Annualisation – This will cover which time periods are being included in the assessment and the number of hours annually each period accounts for
- Do Minimum Parameters – This will cover any costs and information regarding the Do Minimum scheme
- Do Something Parameters – This will cover any costs and information regarding the Do Something scheme
- User Classes – This section will cover how the user classes have been defined
- Input Matrices – This will cover the defining of each input matrix
- Sectors – This will cover the use of a sectoring file

PARAMETERS

- 2.2.2. There are several parameters that need to be defined, as shown in Table 2-1.

Table 2-1 – TUBA Parameters

Parameter	Description	Workington LUF Value
TUBA Version	Which release of TUBA is being used	1.9.17
Run Name	A name to identify the run	Workington 683 2022
Do Min Name	The name used to identify the Do Minimum scenario	Do Minimum
Do Som Name	The name used to identify the Do Something scenario	Do Something
First Year	The first year of the assessment	2025
Horizon Year	The final year of the assessment	2084
Modelled Years	The years for which data is explicitly provided.	2025, 2040
Detail	Whether a binary file containing fully disaggregate results should be output.	Yes
Current Year	The run in which the TUBA run is being carried out.	2022
Print Warn	Should warning and errors be written to the output file	Yes
P&R Car Speed	Speed of the car section of Park and Ride journeys.	65.0
Zones as Sectors	Is each zone a sector	Yes

- 2.2.3. The TUBA version specified is the latest release at the time of writing and therefore uses the latest TAG databook and TUBA economics file in the calculation of the BCR.
- 2.2.4. The run name, Do Min Name and Do Som Name are all just used as identifiers to differentiate different runs and bear no significance to the results produced.
- 2.2.5. The First Year is the scheme opening year, which is then used in the calculation of the Horizon Year; as the assessment period is 60 years this gives a value of 2084 for the Horizon Year.

- 2.2.6. The Modelled Years used are the future years that have been created using Saturn, which are the opening year and design year.
- 2.2.7. Detail is set to yes so that analysis of the results can be undertaken to inspect the benefit and its origins.
- 2.2.8. Current Year is set to 2022.
- 2.2.9. Print Warn is set to yes so that the various warnings can be inspected and used as a tool to not only inspect the suitability of the results but also the model.
- 2.2.10. P&R Car Speed is not relevant to the assessment that is being undertaken, however it is still a required parameter, so this has been left as a standard value.
- 2.2.11. The Zones as Sectors is set to yes to allow for further analysis of the results if needed.

TIME SLICES & ANNUALISATION

- 2.2.12. Each period that will be used in the economic assessment has information that needs to be defined. Table 2-2 shows each of the parameters which needs to be defined.

Table 2-2 – Time Slice Parameters

Parameter	Description
No	The number used to identify each time period.
Duration (min)	How long each time period represents.
Annualisation	The number of this time slice there are in the year.
Period	Which of the TUBA defined period that the time slice belongs to.
Description	A short summary of what the time slice represents.

- 2.2.13. This information is needed for the two time periods that have been assessed for the proposed schemes. The time periods that have been assessed are shown in Table 2-3.

Table 2-3 – Time Periods

No	Description
1	Weekday AM Peak
2	Weekday PM Peak

- 2.2.14. A duration of 60 minutes has been used for each of the time slices, as this is the standard defined in the TUBA guidance as the input matrices are defined as trips per hour.
- 2.2.15. The period is defined using the TUBA economics file. The TUBA economics file time periods are shown in Table 2-4.

Table 2-4 - TUBA Economics File Time Periods

No	Description	Comments
1	AM Peak	7-10 Weekdays
2	PM Peak	4-7 Weekdays
3	Interpeak	10-4 Weekdays
4	Off Peak	7-7 Weekdays
5	Weekend	Weekend

- 2.2.16. These have been used in conjunction with the available models to assess the Workington LUF schemes. Two time periods are available for these schemes:
- AM peak hour (between 08:00 and 09:00); and
 - PM peak hour (between 17:00 and 18:00).
- 2.2.17. This means that the peak hour models of the AM and PM peak need to be converted into the standard 3 hours in the AM and PM peak periods respectively in order to undertake a robust assessment.
- 2.2.18. Due to the lack of available data to produce annualisation factors, three scenarios have been tested:
- 2.2.19. Workington 253 – An assessment of just the singular modelled hour annualised to the year.
- 2.2.20. Workington 759 – An assessment assuming the peak period consists of 3 identical peak hours which is then annualised to the year.
- 2.2.21. Workington 683 – An assessment assuming the peak period is made of 1 peak hour with two less busy hours, based on prior experience.

DO MINIMUM PARAMETERS

- 2.2.22. This section of the TUBA input file covers the information regarding the Do Minimum scheme, with the relevant parameters defined in Table 2-5.

Table 2-5 – Do Minimum Parameters

Parameter	Description
1 st Construction Year	What year the construction will start.
Opening Year	What year the scheme will open.
Stage	SI, PC, PR, OP or WC.

The stage of the scheme is defined in accordance with those in the TUBA manual;

- SI – Scheme Identification,
- PC – Public Consultation,
- PR – Preferred Route,
- OP – Order Publication,
- WC – Works Commitment.

2.2.23. Once these have been defined the costs need to be defined; the parameters used are shown in Table 2-6.

Table 2-6 – Do Minimum Costs

Parameter	Description
Type	A one letter code for type of cost: Construction (C), Land (L), Operating (O), Maintenance (M), Grant (G), Preparation (P), Supervision (S) & Other (D).
Mode	The mode to which the cost applies
Funding	The sector which incurs the cost private, central government or local government.
Cost	Total cost in £000s
Price	Whether the cost is in factor costs (F) or Market Prices (M)
RPI	The GDP for the year used to estimate the cost.

2.2.24. These costs have then been profiled across the years (as described in the next section), entering the percentage of the cost for each type incurred in each year.

2.2.25. The Do Minimum scheme involves no interventions and as such there will be no costs, so the associated information has been left blank.

DO SOMETHING PARAMETERS

- 2.2.26. The same parameters that have been defined above also need entering for the Do Something scheme. The Do Something scheme represents the proposed interventions and therefore has associated costs.
- 2.2.27. The final costs have been used to calculate the initial BCR (Benefit Cost Ratio), which will be calculated using the PVB (Present Value of Benefits) from TUBA, AMAT, and ABC.

USER CLASSES

- 2.2.28. The user classes are defined in this section for use with the Input Matrices with each class having a vehicle type, purpose and person type defined. The values that will be input can be seen in Table 2-7.

Table 2-7 – User Classes

No	Veh / Submode	Purpose	Person Type
1 – Car Commuting	1	2	0
2 – Car Business	1	1	0
3 – Car Other	1	3	0
4 – LGV Personal	2	0	0
5 – LGV Freight	3	0	0
6 – OGV1	4	0	0
7 – OGV2	5	0	0

- 2.2.29. The user classes have been defined using the information available in the model for the car user classes. The LGV and HGV user classes are further split down than the data from the model as this data only covers total LGV and HGV flows.

INPUT MATRICES

- 2.2.30. A matrix has to be defined for each user class, time period and year for both the Do Minimum and Do Something; each of these matrices needs the following defined:
- The number of the matrix that is being defined starting from one and increasing with each matrix defined
 - The defined user classes the matrix applies to
 - The defined time period the matrix applies to
 - The type of data within the matrix, vehicle trips, travel time or distance
 - The format of the matrix
 - The scenario represented by the matrix; 0 for DM and 1 for DS

- The modelled year
- The factor for correcting the data to the correct units
- The file path and name

2.2.31. The trip matrices obtained from the West Cumbria SATURN model are in passenger car units (PCUs). These have been converted into vehicles as TUBA requires matrices in vehicles. The factors to convert from PCUs to vehicles have been calculated using the PCU factor for each user class combined with what percentage of the matrix is made up of that user class.

2.2.32. User classes four and five have a PCU factor of one; however, both are represented by the same LGV matrix and as such the standard split has been used to calculate the factor needed to split the matrix into how many trips are LGV – Personal, and how many are LGV – Freight. This has also been done for user classes six and seven.

2.3 HIGHWAY USER IMPACTS

2.3.1. The highway user benefits have been calculated assuming the peak period is made of 1 peak hour with two less busy hours, using TUBA 1.9.17, and are presented in Table 2-8 below.

Table 2-8 – Highway User Benefits (2022 Prices and Values)

Category	Workington 683 Results
Economic Efficiency: Consumer Users (Commuting)	£18,304,000
Economic Efficiency: Consumer Users (Other)	£17,425,000
Economic Efficiency: Business Users and Providers	£18,957,000
Greenhouse Gases	£277,000
Wider Public Finances (Indirect Taxation Revenues)	-£295,000

3 ACTIVE MODES APPRAISAL (AMAT & ABC)

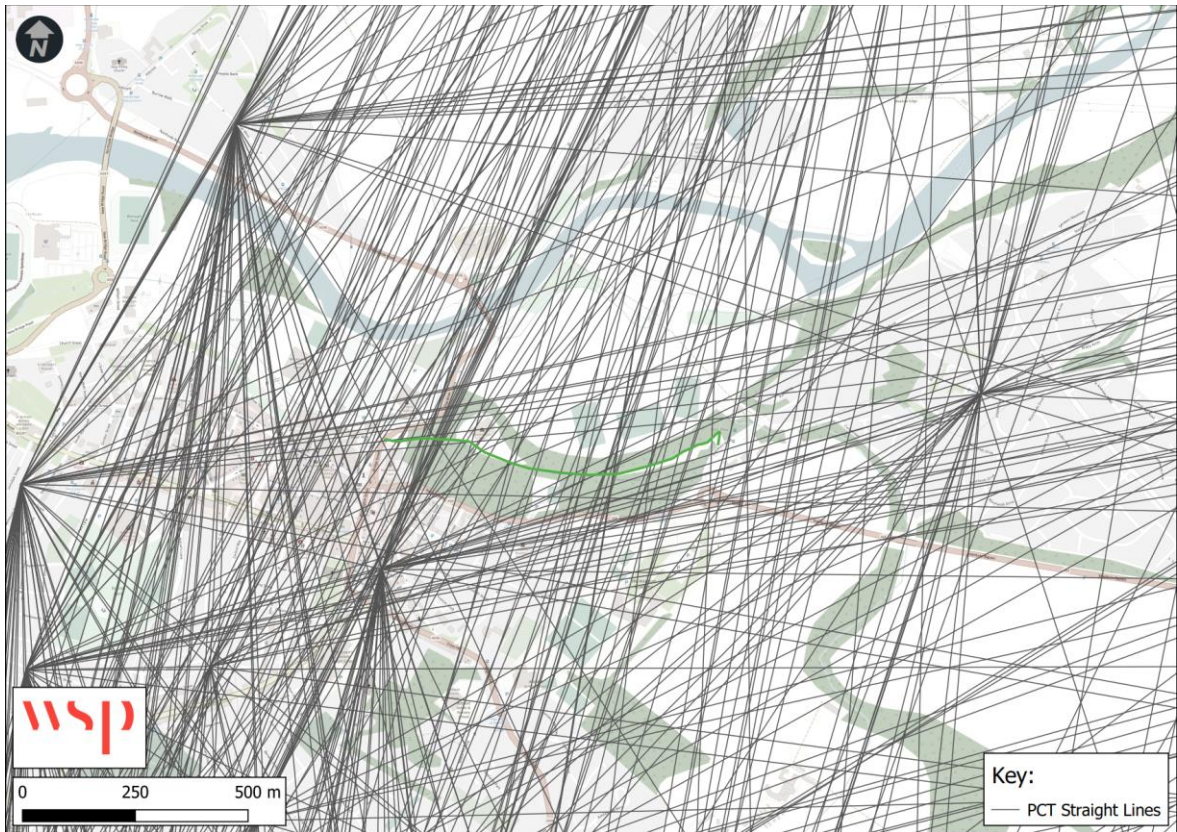
3.1 INTRODUCTION

- 3.1.1. This section of the note sets out the methodology used to calculate the benefits associated with active modes across the proposed schemes using the DfT’s Active Mode Appraisal Toolkit (AMAT) and the TfL’s Ambience Benefit Calculator (ABC).
- 3.1.2. Note the quantifiable benefits captured through this methodology are associated with new and improved links for active modes; while an important part of the overall scheme, the methodology employed and tools used cannot capture the more localised benefits that might be provided by the improvements to specific locations, such as the new crossing point proposed on Hall Brow.

3.2 METHODOLOGY

- 3.2.1. Census 2011 Journey to Work data at Lower-Super Output Area (LSOA) level has been analysed to establish the baseline number of walking and cycling trips that may use the existing and proposed pedestrian and cycle facilities.
- 3.2.2. Census 2011 Journey to Work data for the Cumbria County Council area is obtained from the DfT’s Propensity to Cycle Tool (PCT). The base demand is acquired by downloading the straight-line commuting flows at LSOA-level and plotting these in a Geographical Information System (GIS). The data contains information about the commuters’ origin and destinations, visualised by straight lines between these, as represented in Figure 3-1.

Figure 3-1 – Straight Line Data from PCT



- 3.2.3. Spatial analysis is undertaken in GIS to identify the baseline demand for cycling and walking commuting trips. The PCT straight lines in the near vicinity of each proposed route are selected, followed by a manual desktop process so as to determine which commuters could potentially use sections of the corridor as part of their journey to work. When entirely new routes are proposed - such as a bridge, underpass, or off-highway route - the straight lines intersecting the new link are selected, to represent existing commuters who have the potential to change their route to work.
- 3.2.4. All input data covering the identified journeys (i.e. those straight lines in the near vicinity of the scheme elements) are then extracted from the wider dataset for further calculations, such as mode of travel and average distance travelled. Where a new network is proposed as part of a specific route, there is a potential issue related to the double counting of origin-destination pairs on a single route. These duplicates have been removed for precision of the demand calculations. The straight lines are proportioned based on assumptions and/or presence of adjacent or parallel links to calculate more accurately the baseline demand on a route. Summation of these journeys gives the total number of existing cycle and pedestrian users that could reasonably be expected to utilise the route for commuter purposes.
- 3.2.5. This process estimates the number of cyclist or pedestrians using a certain route, which is assumed to be the one-way commuting trips undertaken on foot or by bicycle. Given, however, both the AMAT and the ABC require the number of all trips to calculate the total benefits (including return trips) for all relevant purposes, this number is converted to the total number of trips, where the outbound and the inbound journeys are counted as separate trips.
- 3.2.6. The DfT's guidance in TAG Unit A5.1 sets out an assumption that 90% of trips are part of a return journey using the same route, and to avoid double counting when converting the number of trips to commuting individuals, the formula below is used:
- $$((No. of Trips * 90\%)/2) + (No. of Trips * 10\%)$$
- 3.2.7. Therefore, to ensure consistency with this assumption, the reverse of the formula was used to convert the identified one-way trips into two-way; this is equivalent to dividing the number of individuals by 0.55 to provide a total number of commuting trips.
- 3.2.8. The methodology set out above calculates the number of commuting trips that could be expected to occur. However, the scheme also aims to improve the walking and cycling experience for all trip purposes and, therefore, consideration of the number of other trips need to be included in the base demand.
- 3.2.9. To calculate the ratio of trips for each purpose, National Travel Survey (NTS) 0409a 2019 data has been utilised, which breaks down trip purpose into the following categories:
- Commuting;
 - Business;
 - Education/escort education;
 - Shopping;
 - Other escort;
 - Personal business;
 - Leisure; and
 - Other (including just walk).
- 3.2.10. Whilst the latest available National Travel Survey dataset on the average number of trips by purpose and main mode is from 2020, the latest data has been deemed skewed due to the pandemic

lockdowns during which travel patterns significantly changed. By calculating the proportion of trips used for each purpose, a ratio of commuting trip to other non-commuting trip purposes can be determined. Non-commuting trips have been considered as a combination of business, education/escort education, shopping, other escort, personal business, leisure and other (including just walk) trips.

3.2.11. The following ratios were therefore determined:

- Cycling commuting trips to other purposes: 1:1.76
- Walking commuting trips to other purposes: 1:12.05

3.2.12. These ratios were applied to the estimated number of commuting trips to determine the number of non-commuting trips that could be expected to occur on the proposed routes. The commuting and non-commuting trips have then been summed to give the base demand for both walking and cycling. presents the base demand used as part of the active travel appraisal.

Table 3-1 – Forecasted Daily Demand

Scheme Component	Cycling Demand (Trips)	Pedestrian Demand (Trips)
Hall Park	43	1,435
Bridge Street	85	3,273
Ladies' Walk	0	190

3.2.13. TAG Unit A5.1 sets out three different approaches that can be taken in estimating the change in demand as a result of active mode infrastructure interventions including:

- Approach 1 – Comparative Study: this includes researching other schemes that have been implemented elsewhere to see what level of impact they had in terms of uplifts in walking and cycling trip numbers.
- Approach 2 – Estimating from Disaggregate Mode Choice Models: uses a model to forecast the impacts of improvements in the attractiveness of cycling for commuting trips of 7.5 miles or less.
- Approach 3 – Sketch Plan Method: this considers the approximate elasticity estimate for the change in demand for cycling in a district, based on a change in the proportion of route that has facilities for cycle traffic.

3.2.14. For the purposes of the Hall Park scheme appraisal, 'Approach 1 – Comparative Study' is deemed to be the most applicable for forecasting changes in active mode demand, based upon the baseline data available and the type of proposed infrastructure included within the scheme. Approach 2 and Approach 3 were not considered appropriate as these focus on either just commuting trips or for changes in total facilities for cyclists.

3.2.15. In order to estimate the uplift in demand resulting from the implementation of the scheme, a desktop research exercise reviewing comparative studies was conducted. This sought to find appropriate and comparable packages of interventions that had been implemented in other relevant locations in order to gauge the level of uptake that may be possible following such interventions.

3.2.16. Desk-based research on cycling and walking uplifts post-implementation of active travel infrastructure schemes was undertaken which identified a range in uplifts achievable; a summary of some of the findings are set out below:

- Cycling Demonstration Town (CDT) programme invested in measures to stimulate increased levels of cycling through combination of physical infrastructure, promotion and other smart measures. CDT ran from 2005 to 2011 to encourage cycling for everyday urban trips in Aylesbury, Brighton and Hove, Darlington, Derby, Exeter and Lancaster with Morecambe. A determination to increase cycling levels, coupled with a carefully considered strategy and modest investment, may be expected to increase cycling levels by between 10% and 50% within a short period of just a few years, in towns that start with 'typical' (relatively low) initial cycling levels. In line with programme was also the Cycling City and Towns (CCT). Between 2005 and 2009, the increase in cycling in each town were respectively Aylesbury +11% (Marketing of existing cycle routes, New routes, Parking spaces, PTP), Brighton +27% (Widening of routes, Extension of routes, Segregated cycle path, Stop lines, Cycle parking, PTP), Darlington +57% (Cycle routes installed, Crossings added, Signage, PTP), Derby +10% (Cycle parking, New route infrastructure, Crossings, Stop lines), Exeter +40% (Filling gaps in cycle network, Traffic-free shared routes, Crossings, Contra flow lane, Signage), Lancaster +25% (Filling gaps in cycle network, Contra flow lanes, Crossings, Cycle lanes, Stop lines, Signage, Cycle parking). There was a 29% increase in cycling for the six CDTs;
- A two-way off-carriageway cycle track has been introduced on Royal College Street linking Kinds Cross and Camden Town. The number of cyclists increased by 58% over 3.5 years;
- There is generally an average increase in cycle usage of 48% due to implementation of off-road cycle tracks;
- Norwich Pink Pedalway, which is a mixed strategic 'pedalway' route, has seen cycling increase of demand of 17% to 29% across the route following cycling infrastructure improvements, including a contraflow route into the city centre, new on-road cycle lanes and cycle tracks, and sections of roads closed to vehicular traffic. The entire route is either separate from traffic or on roads with speed limits at, or below, 20mph;
- Improved pedestrian and cycle links on the corridor and in the surrounding area of the West Midlands metropolitan area, plus dropped kerbs / tactile paving at side roads, upgraded signalised crossing facilities, cycle parking on Quarry Bank High Street, new cycle / pedestrian crossings and wider paths. Improvements on the A452 North Solihull Network (18km of cycle route) showed on average a doubling (100%) in the number of cyclists (in 12 hour counts over 7 days);
- On the Wetmoor Lane walking and cycling route, before and after surveys more than a year apart found that daytime (0700-1900) cycling levels had more than doubled (+127%) from 133 to 302 cycling trips per day;
- Post-scheme cycling trend has been recorded on John Dobson Street where data has shown a three-fold increase in cyclist numbers between 2015 and 2016 (219%).
- General improvements such as resurfacing on the A452 North Solihull Network, the Silkin Way, Wetmoor Lane and post-scheme data on John Dobson Street have resulted in an average of 137% increase in cycling;
- London Greenways schemes, which have included mixture of interventions such as quiet routes through parks, green spaces and lightly trafficked streets, have seen a significant increase of 18% between 2010 and 2013;

3.2.17. Based on the above findings and considering how comparable they are with the proposals for the Workington Hall Park scheme, the core scenario uplifts considered most appropriate for each element of the proposals are set out in Table 3-2, together with the resulting increase in cycle demand, recognising that there will be a greater propensity for cycling if appropriate cycle facilities are provided.

Table 3-2 - Estimated Uplifts in Cycling Demand – Trips

Scheme	Uplift	Increase in Demand	Notes
Hall Park	115%	49	Increase in demand is based on the average between three case studies (first two from the LSTF Large Projects): the Silkin Way multi-user route, which included resurfacing and widening of existing off-road cycle path and lead to an increase of 219% in cycle trips; the Rochdale Canal off-road route, which upgraded areas along the route to enable a continuous uninterrupted travel for cyclists leading to a 108% increase in cycling trips; and the London Greenways, which include a mixture of quiet routes through parks, green spaces and lightly trafficked streets. leading to an overall increase in demand across all monitoring sites of 18%. The average increase from these studies (115%) was deemed suitable due to the low base demand on the route, which is comparable to the relatively low base demands from the case studies.
Bridge Street	32%	27	Increase in demand is based on the average of the twelve Cycling City and Towns Programme schemes, which include traffic-free cycle routes / shared use paths, new and improved cycle routes, and filling gaps in the existing network. This results in an uplift of 32%, which is deemed appropriate given the base demand.

Scheme	Uplift	Increase in Demand	Notes
Ladies' Walk	0%	0	No cycle-specific interventions have been proposed, so 0% uplift has been assumed as a conservative approach.

- 3.2.18. Using the approaches and uplifts set out above, the total number of additional cycle trips is then input into the AMAT to represent 'With Scheme' demand.
- 3.2.19. The approach used for estimating uplifts in cycling trips (set out above), was also used for estimating future walking trips. The findings included:
- On the Rochdale Canal off-road cycle route, the pedestrian count increased by 42% (925 to 1318 in four-day counts) by summer 2015, four months after the route was completed.
 - The Keswick to Threlkeld Railway trail has been fully reconnected and enhanced – new picnic benches, seats and perches at viewpoints have been installed, as well as new comprehensive on-site interpretation to fully tell the national park local history and heritage story of the trail and give information on local wildlife and flora and fauna. These improvements have seen an increase in pedestrian demand of 43% between December 2020 and November 2021.
- 3.2.20. Therefore, it can be assumed that improvements proposed as part of any public realm improvements will also be beneficial in increasing pedestrian trips. The scheme also included a number of measures designed specifically for the benefit of pedestrians.

Table 3-3 - Estimated Uplifts in Pedestrian Demand – Trips

Scheme	Uplift	Increase in Demand	Notes
Hall Park	0%	0	No pedestrian-specific interventions have been proposed, so 0% uplift has been assumed as a conservative approach.
Bridge Street	0%	0	No pedestrian-specific interventions have been proposed, so 0% uplift has been assumed as a conservative approach.
Ladies' Walk	42.5%	81	The uplift is based on the average of two case studies: the increase in walking demand generated following the general improvements on the Rochdale Canal off-road shared use path (42%); and the increase in walking demand generated following the provision of new off-road share use cycle/walking path on Keswick to Threlkeld Trail (43%). This results in uplift of 42.5%, which was deemed suitable given the location of the scheme and the base demand.

- 3.2.21. The total number of additional walking trips at Ladies' Walk is then input into the ABC to represent 'With Scheme' demand.

3.3 ASSUMPTIONS

ANNUALISATION

- 3.3.1. To account for the fact that some active mode trips being assessed are commuter trips and, therefore, do not occur every day, an annualisation factor is applied to the trip estimation, determining an average number of days over which the data is applicable. Since the schemes are designed to benefit all trip purposes, rather than just commuting, simply using the average number of working days for an individual is not considered appropriate, so it is instead used as a starting point in the calculation of the annualisation factor.
- 3.3.2. The number of working days has been estimated by excluding all 52 weekends throughout the year and the assumed 25 days of annual leave, thus, becoming 236 working days of the year. This can be represented by the following equation:

$$236 = 365 - 52 * 2 - 25$$

- 3.3.3. This number has been multiplied by the proportions of commuting trips expected based on the National Travel Survey (2019), which are 0.363 for cycling and 0.077 for walking respectively. However, since the scheme considers all types of trips, the remaining proportions of non-commuting trips, i.e. 0.637 for cycling and 0.923 for walking, have been multiplied by a full year, assumed to be 365 days. The number for commuting and non-commuting trips have then been summed for cycling and walking and an average of the two figures was calculated, giving an average of 340 days during which the scheme will be applicable. This can be represented by the following equation:

$$340 = \frac{((253 * 0.363 + 365 * 0.637) + (253 * 0.077 + 365 * 0.923))}{2}$$

- 3.3.4. As above, the National Travel Survey data from 2020 was deemed skewed due to the Covid-19 lockdowns during which travel patterns significantly changed. Therefore, the 2019 data was used as basis to calculate the annualisation factor.

APPRAISAL PERIOD

- 3.3.5. TAG Unit A5.1 recommends that it is not appropriate to adopt a typical 60-year appraisal period (recommended for large-scale infrastructure projects) due to the typically shorter project lives of cycling and walking schemes. A more realistic appraisal period of 20 years has therefore been assumed for the active mode benefits generated by both the AMAT and the ABC tool.

3.4 ACTIVE MODE APPRAISAL TOOL

- 3.4.1. The DfT's Active Mode Appraisal Toolkit (AMAT, May 2022) has been used to appraise the Workington LUF2 scheme. The tool streamlines the process set out in TAG Unit A5-1 'Active Mode

Appraisal¹ (July 2020) and ensures that the calculation of benefits is in accordance with DfT guidance and its value for money can be consistently compared against other proposed schemes.

3.4.2. The AMAT calculates benefits in relation to a range of impacts linked to an increase in active mode use. These benefits relate to three key areas: mode shift, health and journey quality. Table 3-4 presents each of these benefit types and the way in which they are appraised based upon their impacts.

Table 3-4 - Impacts Appraised Using the Active Mode Appraisal Toolkit

Benefit Area	Benefit	Impacts Assessed
Health	Reduced risk of premature death	Improved health and gaining life years due to increased physical activity
	Absenteeism	Reduced levels of absenteeism from employment due to increased physical activity
Journey Quality	Journey Ambience	Improved experience due to the provision of cycle infrastructure and the environmental conditions on route
Mode Shift	Congestion benefit	Reduced vehicle kilometres reduce the levels of congestion experience by road users.
	Infrastructure	Reduced vehicle kilometres travelled reduce the impacts on infrastructure.
	Accidents	This reflects the effect of reducing vehicle kilometres on road safety. It is not the direct benefit of increased cycle safety.
	Local Air Quality	Reflects a reduction in vehicle kilometres resulting in less pollutants emitted.
	Noise	Reflects a reduction in vehicle kilometres resulting in reduced environmental noise, impacting on annoyance, sleep disturbance and health.
	Greenhouse gases	Reflects a reduction in vehicle kilometres resulting in reduced greenhouse gases emitted.
	Indirect tax	Reflects a reduction in vehicle kilometres resulting in decrease of indirect tax revenue, such as fuel duty. This number will be negative.

3.4.3. In order to calculate the benefits, the AMAT requires the user to input a number of scheme-specific variables:

- Scheme opening year;
- Last year of funding;

¹ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/275394/webtag-tag-unit-a5-1-active-mode-appraisal.pdf

- Type of area the scheme is located in;
- Number of walking and cycle journeys per day without the proposed scheme;
- Number of walking and cycle journeys per day with the proposed scheme;
- The average proportion of a trip which uses the scheme infrastructure;
- Current walking and cycling infrastructure for the route;
- Proposed new walking and cycling infrastructure;
- Proportion using the walking and cycling scheme to commute to work; and
- Appraisal period.

3.4.4. A number of assumptions are also included within the AMAT where the DfT has provided default values based on DfT defined sources and research, such as:

- The decay rate (0.00%);
- Average length of cycling trip (4.84km) and walking trip (1.1km);
- The average cycling speed (15km/h) and walking speed (5km/h);
- Proportions of cyclists and pedestrians who are employed (56.4%);
- The proportions otherwise using a car (11%) and a taxi (8%);
- The percentage of return trips (90%);
- The background growth rate in trips and the period over which this growth rate applies (0.75% per year for 20 years);
- Number of days for which intervention data is applicable per year / annualisation factor; and
- Car occupancy rate (1.6) and taxi occupancy rate (2.4).

3.4.5. These values were retained unless specified and described in the previous sub-section covering the modelling assumptions.

3.4.6. The methodology for calculating the scheme-specific inputs is set out in the sub-section above. The outputs of the AMAT will feed into an initial BCR focussing on the value for money of the active mode infrastructure.

3.5 AMBIENCE BENEFIT CALCULATOR

3.5.1. Ambience valuations relate to improvements to the overall travel 'environment' when undertaking journeys and are based on market research into how much per trip a passenger is willing to pay for improvements. The willingness to pay valuation data is available in Transport for London's (TfL) Ambience Benefits Calculator (ABC) tool, which covers all modes, including public transport, cars, walking and cycling. The tool monetises the benefit of providing enhanced individual journey ambience and public realm by using willingness-to-pay-values in pence per trip per minute (or unit).

3.5.2. While the AMAT calculates journey quality benefits, the attributes on which journey ambience is assessed are limited. The ABC thus presents an alternative tool which calculates annual total ambience benefits, based on a larger selection of attributes. It also looks at individual attributes and gives a value for each attribute, so it is clear what proportion of benefit each attribute is providing.

3.5.3. It is not advised that the attributes related to journey ambience are added together between the AMAT and the ABC tool as this will lead to double counting and inconsistency. Therefore, when calculating journey quality benefits, only the outputs from one of the tools is taken into account.

3.5.4. The ABC tool was used to appraise the infrastructure elements of the scheme that are not currently captured in the AMAT.

- 3.5.5. As ABC is a TfL tool, the willingness to pay values have been calculated for London. In order to adapt this tool to the local context of the scheme, an assumption has been made to adjust the values for Workington.
- 3.5.6. The ABC tool uses the same base demand as calculated from the PCT and the future demand forecasts based on the comparative study approach.

WILLINGNESS TO PAY VALUES

- 3.5.7. The willingness to pay assumptions consist of applying a reduction factor to the TfL willingness to pay values, based on the relationship between median hourly pay in London and Workington. Using official statistical data from the Income and Tax by Borough and District or Unitary Authority (Office for National Statistics, 2020)², this factor has been calculated as 0.62. This means that the willingness to pay values that have been applied for the ambience benefit calculation are 62% of the default values in the TfL tool.

3.6 ACTIVE MODE BENEFITS

JOURNEY AMBIENCE BENEFITS

- 3.6.1. The AMAT was used to calculate the journey quality benefits for active mode users. Journey quality, in the context of the AMAT, relates primarily to the perception of safety. For cyclists, new infrastructure and facilities result in large benefits, whilst public realm improvements such as lighting will improve the journey quality for pedestrians. The AMAT was used to calculate the journey quality benefits for the provision of cycling and walking infrastructure.
- 3.6.2. As the journey ambience benefit in the AMAT relates primarily to safety and the fear of potential accident, the ABC was considered as more appropriate tool to calculate the public realm benefits. The ABC values for the benefits attributes are generated through surveys and indicate an individual's willingness to pay for a certain intervention.

HEALTH AND ABSENTEEISM BENEFITS

- 3.6.3. Health benefits are calculated by monetising the change in mortality (i.e. benefits from gaining life years) which derive from increased physical activity. This is based on decades of research (including repeated WHO studies) which estimate the mortality burden of inactivity is similar to that of smoking and obesity. The AMAT uses assumptions about typical journey distances and speeds and trip choice behaviour (from National Travel Survey data), converted to Metabolically Equivalent Task (MET) hours - a standard metric for physical exertion - and calculates the mortality impact of the change in MET hours using log-linear relative risks for all-cause mortality. Cyclists, for example, are thus estimated to be 10% less likely to die from any cause than non-cyclists. TAG unit A4.1 sets this out in more detail.

² <https://www.gov.uk/government/statistics/income-and-tax-by-borough-and-district-or-unitary-authority-2010-to-2011>

3.6.4. Absenteeism benefits rest on research by NICE and others which shows that physical activity reduces short-term sick leave by 27%, compared with similar studies elsewhere in developed economies, which show reductions of between 13% and 40%. TAG unit A4.1 recommends assuming a reduction of 25% in short-term sick leave from regular physical activity. The AMAT applies this only to the proportion of pedestrians and cyclists who are using the scheme to travel to work. The benefits derived are based on average gross salary costs (TAG Databook table A1.3.1). TAG unit A4.1 sets this out in more detail.

MODE SHIFT BENEFITS

3.6.5. Mode shift refers to the economic benefits that can be realised as a result of reduced car kilometres. The impact of the mode shift generated by the scheme will be approximated in terms of user and non-user benefits to decongestion, collisions, greenhouse gases, air quality, noise, infrastructure, and indirect tax benefits through standard TAG MEC calculations. The latest carbon values for appraisal, published by BEIS in September 2021, have been used. These carbon values are based on updated evidence on the valuation of greenhouse gas (GHG) emissions for transport interventions.

RESULTS

3.6.6. The total benefit to active mode users in 2022 prices and values equates to **£1.3m** over the appraisal period. Table 3-5 sets out the monetised benefits for each active mode benefit category.

Table 3-5 - Active Mode Benefits (2022 Prices and Values)

Category	Active Mode Benefits
Congestion	£55,222
Noise	£629
Local Air Quality	£1,300
Greenhouse Gases	£4,293
Journey Quality	£295,370
Physical Activity	£971,967
Accidents	£9,441
Indirect Taxation	-£5,258

4 SUMMARY OF RESULTS – TRANSPORT SCHEMES

4.1.1. In line with the Department for Levelling Up, Housing and Communities (DLUHC), the present values of costs and benefits are calculated in 2022 prices and values. The table below displays the analysis of monetised costs and benefits for the Transport Scheme as part of the Workington Gateway scheme, along with the package Net Present Value (NPV) and Benefit to Cost Ratio (BCR).

Table 4-1 – Transport Scheme Analysis of Monetised Costs and Benefits (2022 Prices and Value)

Category	Transport Scheme
Noise	£629
Local Air Quality	£1,300
Greenhouse Gases	£281,293
Journey Quality	£295,370
Physical Activity	£971,967
Accidents	£9,441
Economic Efficiency: Consumer Users (Commuting)	£18,312,905
Economic Efficiency: Consumer Users (Other)	£17,469,228
Economic Efficiency: Business Users and Providers	£18,959,089
Wider Public Finances (Indirect Taxation Revenues)	-£300,258
Present Value of Benefits (PVB)	£56,000,964
Broad Transport Budget	£11,473,908
Present Value of Costs (PVC)	£11,473,908
Overall Impacts	
Net Present Value (NPV)	£44,527,056
Benefit to Cost Ratio (BCR)	4.88

4.1.2. The BCR of the transport package has been calculated at 4.88, demonstrating Very High Value for Money category. The BCR is based on a combination of benefits from the junction and road improvements, along with the active travel proposals. Whilst these results are based solely on Level 1 benefits, there are further wider economic impacts and non-monetisable benefits that the scheme will generate, which have not been considered in this appraisal.

5 HALL PARK WALLED GARDEN

5.1 INTRODUCTION

- 5.1.1. This section of the note sets out the methodology used to calculate the benefits associated with the cultural and social enterprise elements included in the Hall Park Walled Gardens.
- 5.1.2. Economic and social benefits associated with these proposal have been quantified in line with Green Book 2022 and/or DLUHC Appraisal Guide. All values are presented in 2022 real prices and present values at a rate of 3.5%. Benefits are broken into three categories: Initial BCR, Adjusted BCR or not included in the BCR.
- 5.1.3. All methods and assumptions used to estimate the benefits of the Walled Gardens are drawn from the following Government publications and guidance documents including:
- HM Treasury, Green Book (2022)
 - DLUHC, Appraisal Guide (2016)
 - Levelling Up Fund Documents (2022)
 - Preparing an Economic Case
 - Round 2 Application Guidance
 - Homes England, Additionality Guidance, 4th Edition (2014)
 - HACT, Measuring the Social Impact of Community Investment: A Guide to using the Wellbeing Valuation Approach (2014)
 - HM Treasury, GDP Deflator (March 2022)

5.2 METHODOLOGY

Initial BCR

- 5.2.1. Direct GVA per FTE impact is based on employment data provided by West House on the estimated number of additional FTEs required as a result of the proposal. GVA per FTE is based on ONS data which has been adjusted based on estimated GVA per FTE of each job type and applied to each FTE over a 10-year period. The GVA per FTE is assumed to be £50,000 for central management (0.72 FTEs) staff and £25,000 for direct support staff (4.75 FTEs). Overall, this results in an average GVA per FTE of approximately £28,300. The benefit has been modelled for a 10-year period from 2025/26 to 2034/35.
- 5.2.2. Green space benefits for local residents are calculated via a WTP measure, assumed to apply to the working aged population living within 1 km of the Walled Garden. The WTP value is based on the local valuation model presented by Fields in Trust (Revaluing Parks and Green Spaces – Measuring their economic and wellbeing value to individuals, 2019) which provides a WTP of £30.25 per year. A displacement rate of 25% is applied meaning an additionality rate of 75% is used for the modelling of this benefit. This benefit has been modelled for a 10-year period from 2025/26 to 2034/35.
- 5.2.3. Social Value benefits are calculated using HACT guidance (Measuring the Social Impact of Community Investment: A Guide to Using the Wellbeing Valuation Approach, 2014). The values sourced from the HACT tool for the social value delivered by training, gardening and improvements

in young people's confidence were applied to result in the total social value benefits. It is assumed there will be a leakage of 25%, displacement of 25% and deadweight of 25% meaning a 45.6% additionality rate. These benefits have also been modelled for a 10-year period from 2025/26 to 2034/35.

- 5.2.4. Benefits of tree planting has been estimated from on academic research which determined an average benefit per tree species, then used to derive a midpoint value of £4,600 in 2018 (real prices). Adjusting to 2022 (real prices) by applying a discounting rate from 2.1% to 3.5% in line with HM Treasury guidance yielded a value of £5,500 per tree planted over a 50-year period. In order to comply with HM Treasury appraisal, this has been adjusted from 50 years to 30 years, which returns a benefit over a 30-year period of £3,300 per tree planted.

Adjusted BCR

- 5.2.5. Higher footfall in areas surrounding Hall Park will lead to increases in expenditure in shops and businesses. There is also the impact this could help in making vacant buildings in the town centre more viable. Through increased expenditure in the town, this would lead to higher property prices as well as further job creation.
- 5.2.6. Using Co-Star data, it is estimated there are approximately 100 commercial properties within a 200m buffer of Hall Park and an average price per property is £100,000. A real growth rate of 0.5% has been applied with an additionality rate over a five-year persistence period starting from 2025/26. Residential land values in the surrounding area (200m from the site) are expected to benefit from this important regeneration scheme, increasing the attractiveness of the local area as a place to live.
- 5.2.7. The number of dwellings within a 200m radius was estimated to be 186. A real growth rate of 0.5% has been applied with an additionality rate of 50% over a five-year persistence period starting from 2025/26. To assess the economic value of proposed green space improvements, a 1km catchment was applied to estimate the working age population living in LSOAs within 1km of the Walled Gardens. The total is estimated to be 4,733 residents within this threshold.

6 SUMMARY OF RESULTS – WALLED GARDEN

6.1.1. In line with the Department for Levelling Up, Housing and Communities (DLUHC), the present values of costs and benefits are calculated in 2022 prices and values. The table below displays the analysis of monetised costs and benefits for the Walled Garden Scheme as part of the Workington Gateway scheme, along with the package Net Present Value (NPV) and Benefit to Cost Ratio (BCR).

Table 6-1 – Walled Garden Scheme Analysis of Monetised Costs and Benefits (2022 Prices and Value)

Category	Walled Garden Scheme
Direct GVA associated with additional employment	£1,201,423.30
Green Space improvements	£935,119.42
Tree Planting	£165,000
Additional training delivered	£71,507.53
Gardening	£64,409.51
Improvements in youth confidence	£423,691.67
Present Value of Benefits (PVB)	£2,884,135.55
Land Value Uplift	£365,117.15
Adjusted PVB	£3,249,252.70
Broad Transport Budget	£2,121,694
Present Value of Costs (PVC)	£2,121,694
Overall Impacts	
Adjusted Net Present Value (NPV)	£1,127,558.70
Initial Benefit to Cost Ratio (BCR)	1.36
Adjusted BCR	1.53

6.1.2. The adjusted BCR of the Walled Garden transport package has been calculated at 1.53, demonstrating Medium Value for Money category. There are further wider economic impacts and non-monetisable benefits the scheme will generate, which have not been considered in this appraisal.



7 SUMMARY OF RESULTS – COMBINED PACKAGE

- 7.1.1. Having an overall adjusted BCR of 4.36, this puts the overall LUF2 bid for Workington into the **Very High** Value for Money category.
- 7.1.2. The adjusted Net Present Value associated with the bid is £45.6M.



Amber Court
William Armstrong Drive
Newcastle upon Tyne
NE4 7YQ

wsp.com

CONFIDENTIAL