BROMSGROVE DISTRICT COUNCIL

MEETING OF THE COUNCIL

WEDNESDAY 22ND JANUARY 2025, AT 6.00 P.M.

PARKSIDE SUITE - PARKSIDE

APPENDICES DOCUMENTATION

PLEASE NOTE THAT THE APPENDICES FOR AGENDA ITEMS 12a, 12b, 12c and 12d OF THE MAIN AGENDA PACK ARE CONTAINED IN THIS SUPPLEMENTARY PAPERS PACK.

S. Hanley
Chief Executive

Parkside
Market Street
BROMSGROVE
Worcestershire
B61 8DA

14th January 2025

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Scarfield Wharf Stables			
Scarfield Hill	B48 7SQ	Alvechurch	BDC ID ALV001

Description / Summary

Stable building, probably built in 1861 after the 1847 wharf enlargement. A smaller building appears on the 1842 Tithe map, and this may be incorporated in the current building, but there are no obvious indications in the building fabric. Scarfield Wharf was originally constructed around 1806, following the construction of the canal stretch between Hopwood and Tardebigge, and included a winding hole, stables, machine house and weighbridge, the latter of which was taken from Hopwood Wharf. In 1808 the wharf was the southern terminus for a horse-drawn packet boat service, conveying goods and people between Alvechurch and Birmingham, although this enterprise only lasted 5 years. The stables likely used bricks from the then nearby Wynn's Brickworks, which operated from 1860-1939.

Age, Authenticity and Rarity

Mid-C19th with possible earlier parts incorporated. There are minimal signs of change to principal form and fabric since 1861, although windows and rainwater goods appear to be modern. The building is one of only a handful of surviving historic wharf buildings in the area.

Architectural Interest

Simple, utilitarian form with interesting brickwork.

Historic Interest

Historic association with the canal, particularly associated with Wynn's Brickworks as probable supplier for its principal fabric, and subsequent occupier as the brickworks leased the wharf for transporting its goods.

Townscape/Villagescape/Landscape Interest

Positive contribution to canal corridor, strengthening the line of the bridge and marking an intersection of travel modes.

New Alvechurch Marina Building			
Scarfield Hill	B48 7SQ	Alvechurch	BDC ID ALV002

Description / Summary

Marina Offices and Chandlery, built in the 1980s-90s, to designs from local firm Frank Helm Associates.

Age, Authenticity and Rarity

Late C20th, but an authentic and unique design; possibly the only purpose-designed modern canal building in the area.

Architectural Interest

Unique, modern form appearing to reference the 'cloth and plank' cargo section of historic working canal boats. The building is designed specifically for visual interest as opposed to a utilitarian 'shed'.

Historic Interest

The conversion of the wharf from industrial use to leisure use was a key moment in its history and ensured its ongoing survival as a piece of canal infrastructure. The Marina building has been the hub of local canal life for over 40 years.

Townscape/Villagescape/Landscape Interest

Positive contribution to canal corridor, modern but not jarring or harmful.

The Weighbridge Freehouse				
Scarfield Hill	B48 7SQ	Alvechurch	BDC ID	ALV003

Description / Summary

Pub, originally weighbridge offices and machine room, probably built/rebuilt in 1847 as part of the wharf's expansion. It was converted to a pub in the late C20th after falling into disuse.

Age, Authenticity and Rarity

Mid-C19th with C20th conversion to pub. Exterior is well preserved; the only known surviving weighbridge building in the area.

Architectural Interest

Symmetrical composition, casement windows with raking surrounds, decorative brick hood moulds, large first floor window to gable facing canal.

Historic Interest

Historic association with the canal function, weighing goods for further transit at the road intersection, more recent social/communal importance as a pub.

Townscape/Villagescape/Landscape Interest

Positive contribution to canal corridor, marking intersection of travel modes.

The Hydaulic Ram House				
Located to the east of Rowney Gree		Rowney Green	BDC ID	ALV0069

Description / Summary

A small brick structure with a flat roof. Located by a water course on the edge of Rowney Green. It was not possible to access so it was not clear whether any machinery remains. Hydraulic rams used gravity and water pressure to pump water.

Age, Authenticity and Rarity

Installed in the 1880’s using just the energy of the stream to provide running water to both Rowney Green House Farm and Seechem Manor - over half a mile away. It only appears on the Third Edition of the OS in 1928.

Architectural Interest

Historic Interest

Provided an early supply of running water to properties in the village.

Townscape/Villagescape/Landscape Interest

Hopwood Village Hall				
Birmingham Road	B48 7AL	Hopwood	BDC ID	ALV011

Description / Summary

Village Hall, formerly a lemonade factory given to the village by F.J.Batchelor, extended, converted and opened in 1914.

Age, Authenticity and Rarity

Largely early C20th conversion with late 20th century windows. Overall form is well preserved.

Architectural Interest

Large, striking bay window facing Birmingham Road, rowlock brick with plain tile window cills.

Historic Interest

Historic communal value, having been gifted to the village, and a focus of community life for over 100 years.

Townscape/Villagescape/Landscape Interest

Positive feature, standing forward of predominant building line. Marks a 'second centre' for Hopwood village along with the canal bridge.

Wharf Cottages				
Callow Hill Road	B48 7LR	Alvechurch	BDC ID	ALV013

Description / Summary

Cottages, formerly stables to Callow Hill Wharf from mid-C19th, which operated as a coal yard until around the 1920s.

Age, Authenticity and Rarity

Mid-C19th construction showing rare use of stone; very unusual for a low-status building of this age, which gives credence to the rumour that the stone was repurposed from Butterfield's demolition work at the nearby St. Lawrence's Church. Windows are modern Upvc replacements and there are signs of infilled openings.

Architectural Interest

Use of coursed, roughly squared stone, possibly taken from the village church. The slate roof has an unusually low pitch.

Historic Interest

Historic association with the canal's industrial use and the associated coal yard.

Townscape/Villagescape/Landscape Interest

Positive contribution to canal corridor, marking intersection of travel modes.

The Bakery, 1A			
Latimer Road	B48 7NP	Alvechurch	BDC ID ALV014

Description / Summary

Part of former bakehouse, interwar, converted to dwelling in 1980s/90s.

Age, Authenticity and Rarity

Interwar building with later modifications, showing unusual design. Appears reasonably well preserved; porches and dormer may be later additions; windows may not be original.

Architectural Interest

Lancet Gothic features, rare for this era where diluted Arts & Crafts/Edwardian style dominated. Reversed gambrel roof and string course with corbelled corners add interest.

Historic Interest

Part of original bakery serving workers on interwar "New Station Road" estate, near train station.

Townscape/Villagescape/Landscape Interest

Unique building within an otherwise homogenous streetscape, positive contribution.

Rosemary Cottages			
Bittell Road	B48 7BN	Alvechurch	BDC ID ALV018

Description / Summary

C19th cottages with functional connection to the canal and the needle-making industry.

Age, Authenticity and Rarity

C19th, present on 1842 Tithe map. Simple/typical form, modernised with render and Upvc windows.

Architectural Interest

Historic Interest

Original two dwelling occupied by John Wareing in 1842 with wife and three sons, he was a 'Canal Labourer' and two of his sons were needle-makers. Connection with both canal and needle-making is important to the area; it is not clear if the house itself hosted cottage industry needle making.

Townscape/Villagescape/Landscape Interest

Positive contribution to reservoir and canalside landscape; unusual interjection sitting in lowland adjacent to embanked, raised canal.

457			
Birmingham Road	B97 6RL	Alvechurch	BDC ID ALV022

Description / Summary

Interwar, Modernist dwelling.

Age, Authenticity and Rarity

Constructed between 1927 and 1938, in a Modernist style, rare in the region, and reasonably well preserved in overall form.

Architectural Interest

Unusual and well executed Modernist dwelling.

Historic Interest

Townscape/Villagescape/Landscape Interest

Positive contribution to streetscape as a standout piece of architectural design.

The Crown Inn			
Withybed Lane	B48 7PN	Alvechurch	BDC ID ALV031

Description / Summary

C19th boaters' inn, known locally as the 'Drawbridge' or 'Heave-up' due to the former vertical lift bridge that was nearby.

Age, Authenticity and Rarity

C19th, well preserved inn with attached stable block intact; some later subservient additions.

Architectural Interest

Simple architecture with some interesting details, including double rowlock segmental arch heads to ground floor windows, timber shutters to first floor, and dentilled eaves. Brickwork is flemish bond, accentuated with light headers.

Historic Interest

Social importance to village; historically more so to the canal and local Withybed community.

Townscape/Villagescape/Landscape Interest

Positive contribution to canal corridor and road, marking intersection of travel modes and gateway to Withybed Green.

Havencroft Nursing Home				
Formerly The Elms, Birmingham Roa	B48 7AS	Hopwood	BDC ID	ALV032

Description / Summary

Large, late C19th house occupying a prominent position in Hopwood, now a care home.

Age, Authenticity and Rarity

Late C19th with well-preserved frontage, but heavily extended to rear.

Architectural Interest

Asymmetrical composition with three bays. Left hand bay has canted bay window to ground floor with pediment; main entrance to central bay with moulded, two centred arch and brick buttressed porch with modillioned, moulded cornice and shaped pediment; right hand bay has two storey bay window with octagonal turret roof and three windows per storey under gauged brick segmental arches with key blocks and drip moulds. Roof is clay tiled with fish scale banding, attic storey dormer over central bay and gable over left hand bay.

Historic Interest

Original high status dwelling, occupied by Phoebe L Baker, widower of Richard Skidmore. Baker gave almhouses to Belbroughton (Wood Lane) in 1903.

Townscape/Villagescape/Landscape Interest

Landmark building in streetscape with mature tree screen to frontage.

1 & 2				
1 & 2 Birmingham Road, Hopwood	B48 7TR	Hopwood	BDC ID	ALV036

Description / Summary

C19th canal cottages associated with original Hopwood Wharf.

Age, Authenticity and Rarity

Early to mid-C19th, plan form and simplicity preserved, but otherwise modernised.

Architectural Interest

Simple cottages, painted brick and recently re-roofed in clay tiles.

Historic Interest

Only surviving remnant of Hopwood Wharf after road widening and ceasing of the wharf's activities, housed canal workers including fume extraction attendant for Wast Hills Tunnel.

Townscape/Villagescape/Landscape Interest

Forms gateway with pub opposite, marking location of canal/road intersection and the beginning of the southern portion of the village.

Post Office and Adjoining Building, 1				
Bear Hill	B48 7JX	Alvechurch	BDC ID	ALV037

Description / Summary

C18th former grammar school, later post office and shops in village centre.

Age, Authenticity and Rarity

C18th origins with later modifications, but reasonably well preserved overall form and materials.

Architectural Interest

Hipped slate roof with brick stacks, dentilled eaves. Rounded arch windows to second floor of left hand, rendered unit, with bow window to ground floor shop. Tripartite window to first floor projecting section of right hand unit and attractive, curved corner shop front to ground floor. Also, to the side and visible from access, original external stair on west gable end, originally leading to 2nd floor dormitories, and blue brick, gothic arched entrance door below.

Historic Interest

Originally a grammar school for the village, later post office and shops; a central part of village life under its various guises.

Townscape/Villagescape/Landscape Interest

Marks the edge of the retail/commercial centre of the village, forming a gateway with the village hall opposite.

Town Mill				
Radford Road	B48 7LD	Alvechurch	BDC ID	ALV038

Description / Summary

Former flour mill dating from 1875 at the edge of the village centre, now converted into commercial offices.

Age, Authenticity and Rarity

Late C19th, converted and modified but street-facing frontage is preserved. Rare example of remaining industrial building in local area.

Architectural Interest

Designed by locally renowned architect E.A. Day, nephew and inheritor of the practice of Henry Day, also responsible for a number of schools and churches, and one time mayor of Worcester. The principal building is three storeys with four bays, regularly laid out in typical industrial fashion with multipane windows under brick segmental arches.

Historic Interest

Historic economic importance to the village as a place of industry and employment.

Townscape/Villagescape/Landscape Interest

Set back from the road, marks the edge of the village on the eastern extent along Radford Road.

The Old School House			
School Lane	B48 7SA	Alvechurch	BDC ID ALV039

Description / Summary

Dwelling constructed circa 1856, originally attached to adjacent former school as schoolmaster's house.

Age, Authenticity and Rarity

Mid-C19th, extended and adapted, but main body and more decorative east façade remain intact.

Architectural Interest

Designed by renowned architect William Butterfield. Roughly symmetrical east façade with half-hipped, clay-tiled roof and off-centre, stepped brick stack. First floor has black brick diapering and three casement windows. Ground floor has two casement windows under flat, polychromatic arches with segmental relieving arches above, and a central, stepped and gabled porch with such a shallow projection that its gable parapet doubles as its roof.

Historic Interest

Connection with the adjacent school, built to serve the parish in the nineteenth century.

Townscape/Villagescape/Landscape Interest

Limited, edge of village and not particularly prominent.

Methodist Chapel			
Chapel Lane	B48 7QH	Rowney Green	BDC ID ALV040

Description / Summary

Wesleyan chapel built in 1869, remains in use as a village church.

Age, Authenticity and Rarity

Mid-late C19th, extended to rear but otherwise well preserved; locally rare.

Architectural Interest

Simple, understated but with distinctive classical features; clearly Nonconformist.

Historic Interest

Local communal importance to village as a spiritual base and centre of community life.

Townscape/Villagescape/Landscape Interest

Limited contribution due to location and scale.

Baptist Chapel				
Red Lion Street	B48 7LG	Alvechurch	BDC ID	ALV041

Description / Summary

Baptish chapel built in 1860, remains in use as a Baptist church.

Age, Authenticity and Rarity

Mid-C19th, extended and adapted, but main body and more decorative east façade remain intact. Sunday school to rear added 1928 by Bloomer and Gough. Church is well preserved and locally rare.

Architectural Interest

Designed by well-known architect James Cranston in a High Victorian Gothic style. Cranston was also architect of, inter alia, the Grade II* listed pump rooms at Tenbury Wells. The church northeast gable of the church has grouped lancet windows in stone tracery, with a sawtooth brick, pointed arch. The east entrance door has a similar arch, whilst two small windows either side of the central group are set under drip moulds. The buidling is mainly brick and includes black/red polychromy.

Historic Interest

Local communal importance to village as a spiritual base and centre of community life.

Townscape/Villagescape/Landscape Interest

Positive contribtution to streetscene; set back from established frontage line, but making its presence known through its decorative quality.

Old Railway Station				
Station Road	B48 7SE	Alvechurch	BDC ID	ALV042

Description / Summary

Railway station built in 1859 as part of the Redditch railway. Now in use as a children's nursery.

Age, Authenticity and Rarity

Mid-C19th, extended and modified but the principal form is intact. The only station in this parish.

Architectural Interest

Simple single storey brick building with deep verge overhangs. Windows have rendered segmental arches with keyblocks.

Historic Interest

Important transport node historically connecting Alvechurch to surrounding towns and Birmingham; catalyst for growth of the village towards the southwest.

Townscape/Villagescape/Landscape Interest

Limited contribution due to location and scale.

Bordesley Park Farmhouse				
Dagnell End Road	B98 9BH	Beoley	BDC ID	ALV045

Description / Summary

Bordesley Park Farm, Alvechurch. Partially extant 17th century unlisted farmstead with unconverted buildings.

Age, Authenticity and Rarity

Farmstead with C17th origins, now in use as a wedding venue.

Architectural Interest

The main farmhouse is a fairly typical brick building, with some diapering, segmental arched windows and a prominent east gable stack. Timber framing is visible to the rear, and one of the outbuildings has a gable dovecote which matches with an outbuilding on the Bordesley Hall site, 1.35km northwest.

Historic Interest

Historically associated with Bordesley Hall.

Townscape/Villagescape/Landscape Interest

Positive contribution to Bordesley Park landscape as a historic farmstead.

Lodge Farm (now Rowney Lodge Farm and Alpine Lodge Farm)				
Rowney Green Lane	B48 7QZ	Rowney Green	BDC ID	ALV046

Description / Summary

Early C19th farmstead.

Age, Authenticity and Rarity

At least 1842 (present on Tithe maps); appears to be earlier, farmhouse has been extended and modified but east façade is relatively well preserved. Farmstead retains some original outbuildings. The ownership of Lodge Farm was subdivided in the mid-1980s when the barns and some plots of land were sold off.

Architectural Interest

Farmhouse appears to follow Georgian fashion, with 3 symmetrical bays, low-pitched, hipped slate roof and a rounded arched entrance fanlight. The upper central and right windows are 4/8 sashes without horns, possibly original; the remainder are likely later replacements.

Historic Interest

No known notable associations or inhabitants.

Townscape/Villagescape/Landscape Interest

Positive contribution to landscape as a partially preserved farmstead.

Village Hall				
Bear Hill	B48 7JX	Alvechurch	BDC ID	ALV047

Description / Summary

Early C20th village hall.

Age, Authenticity and Rarity

Built in 1929, principal features are preserved although the dormer windows appear to have been replaced with Upvc.

Architectural Interest

Designed by Bloomer and Gough, red brick on stone plinth. Brick is in fourth course Flemish bond with black headers and has contrasting brick quoining. Windows to the east projecting gable have multi-layered, tile crease lintels, whilst those on the main body of the building are set between brick pilasters and have decorative brick and tile sub-cills. Doors have vertical, riveted timber bars. There are four, waney-edge timber dormers to the roof, with a louvred timber cupola to the ridge.

Historic Interest

Historic communal interest as a social hub to the village.

Townscape/Villagescape/Landscape Interest

Prominent building on Bear Hill with unique architectural character.

Tunnel House				
Wast Hills Lane	B48 7AT	Hopwood	BDC ID	ALV048

Description / Summary

House adjacent to south entrance to Wast Hills tunnel, probably late C18th. Currently unoccupied and boarded up.

Age, Authenticity and Rarity

Late C18th, updated roof and porch extension; windows are boarded but potentially historic, overall form is well preserved. Unique building function in area.

Architectural Interest

Simple brick building with clay tiled roof, central and end stacks. Windows have two-layered segmental arches with a bottom row of red, rowlock bricks and a top row of blue brick headers.

Historic Interest

Historically associated with the canal tunnel's operation, important to local industry and commerce.

Townscape/Villagescape/Landscape Interest

Prominent feature on Wast Hills Lane, very close to roadside and helping to mark the presence of the canal which is otherwise hidden in a deep cutting.

2, 4, & 6			
Swan Street	B48 7RP	Alvechurch	BDC ID ALV049

Description / Summary

Row of C18th cottages, originally a workhouse, now three dwellings including a barbers in Number 4.

Age, Authenticity and Rarity

C18th origins, evidence of workhouse use is now limited; interior plan form may still show indications. Number 4's ground floor shop front is heavily modified. Rare typology for area.

Architectural Interest

Two-storey, linear brick range with slate roof and single brick stack. Dentilled eaves, three course brick string at first floor level and segmental brick arches to ground floor windows. The building's plinth shows signs of an older building beneath, including contrasting brickwork and stone to the north end.

Historic Interest

Historical use as a workhouse is of interest, important to the area's social history.

Townscape/Villagescape/Landscape Interest

Not highly significant, but maintains the continuous building line along the west side of Swan Street.

Groveley Hall (Groveley House)			
Birmingham Road	B31 4UH	Hopwood	BDC ID ALV050

Description / Summary

Originally C16th farmstead with substantial later alterations and extensions, now a dwelling.

Age, Authenticity and Rarity

C16th origins, heavily modified and extended, but rare for its age. Some parts of timber frame still visible externally.

Architectural Interest

Timber frame and brick farmhouse, large modern brick extensions are of low interest.

Historic Interest

The manor of Groveley was owned in 1536 by the college of Westbury and granted to Sir Ralph Sadleir in 1544, then sold to John Coombes in 1548-9, and again to Sir John Lyttelton in 1550. Early in the ninetenth century it was sold by Robert Middleton Biddulph to John Pickering.

Townscape/Villagescape/Landscape Interest

Positive contribution to landscape as a partially preserved farmstead.

Station Road Bridge (Bridge 60), Worcester and Birmingham Canal				
Station Road	B48 7SQ	Alvechurch	BDC ID	ALV051

Description / Summary

Early C19th road canal road bridge.

Age, Authenticity and Rarity

Early C19th. Parapets rebuilt in poorly matched brickwork, but overall form is retained, as are stone end pier caps and the brickwork below road surface level. The lower parts of the arch stilt arrises, towpath side, have been replaced in blue brick, presumably due to previous rope wear.

Architectural Interest

Stilted arch road bridge, fairly typical design, stone end pier caps remain.

Historic Interest

Important as adjacent to first wharf on this section of the canal, key intersection for passenger boat trips also.

Townscape/Villagescape/Landscape Interest

Positive contribution as typical hump-backed canal bridge within canal environment

Bittell Bridge (Bridge 66), Worcester and Birmingham Canal				
Bittell Farm Road	B45 8BJ	Alvechurch	BDC ID	ALV052

Description / Summary

Early C19th road canal accommodation bridge.

Age, Authenticity and Rarity

Early C19th. North side substantially rebuilt, but south side is substantially original.

Architectural Interest

Stilted arch road bridge, fairly typical design, rounded stone coping to south parapet remains.

Historic Interest

Marker of canal history, connecting local Bittell Farm with its land.

Townscape/Villagescape/Landscape Interest

Positive contribution as typical hump-backed canal bridge within canal environment.

Hopwood Bridge (Bridge 68), Worcester and Birmingham Canal			
N/A	B48 7AQ	Hopwood	BDC ID ALV053

Description / Summary

Early C19th road canal accommodation bridge.

Age, Authenticity and Rarity

Early C19th. Substantially intact, some replacement brickwork to arch stilt arris, with rope marks, possibly an early repair.

Architectural Interest

Stilted arch road bridge, fairly typical design, parts of rounded stone coping to south parapet, and stone end pier caps, remain.

Historic Interest

Marker of canal history.

Townscape/Villagescape/Landscape Interest

Positive contribution as typical hump-backed canal bridge within canal environment.

Uplands			
Coopers Hill	B48 7BX	Alvechurch	BDC ID ALV054

Description / Summary

Mid-C19th century dwelling.

Age, Authenticity and Rarity

Mid-C19th century, very well preserved and rare level of decorative style.

Architectural Interest

Predominantly red brick with banded blue/red clay tiled roof. Sawtooth brick eaves, verve and string courses at first floor and attic, stone lintels and cills to windows, with stone mullions at ground floor. Pointed, polychromatic brick relieving arches with recessed brick spandrels over stone lintels. 1/4 octagonal entrance porch with pointed arch door and two matching lights either side, all with decorative, coloured glass.

Historic Interest

Was home to local architect Francis Bromilow in early twentieth century; original architect and occupiers unknown.

Townscape/Villagescape/Landscape Interest

Limited contribution due to location.

St Mary's Catholic Church			
School Lane	B48 7SA	Alvechurch	BDC ID ALV055

Description / Summary

Former mid-C19th century school, now a Catholic church.

Age, Authenticity and Rarity

Built 1856-8, poorly extended and modified but main body and gable is still legible. Paired with the school house, represents a rare survival of this typology of Butterfield's work in the region.

Architectural Interest

By William Butterfield, tall and steeply pitched, clay tiled roof; large, pointed arch window to street-facing gable and to rear. Rear has a flat head with later brick infill to arch spandrel above.

Historic Interest

A key part of village life in the nineteenth and twentieth centuries. Since the 1970s it has also taken on spiritual significance as a church.

Townscape/Villagescape/Landscape Interest

Limited, edge of village and not particularly prominent.

The Peacock			
Icknield Street	B38 0EH	Forhill	BDC ID ALV056

Description / Summary

Early C19th century public house, formerly part of the Weatheroak Estate.

Age, Authenticity and Rarity

Built circa 1826, extended and altered but principal form and a number of architectural features are preserved.

Architectural Interest

Original building in an L-plan, two storey with subservient rear range. Clay tiled roof with four, fluted brick end stacks and shaped timber barge boards. South gable stack flutes are mostly infilled. Rear range has dentilled corbelling to verge. Upper floor windows have projecting brick drip moulds. Rear stable block includes inset post box in wall.

Historic Interest

Social importance to surrounding area; in the mid-twentieth century was said to be the only licensed premises on Cadbury-owned land. Located at, historically, a crossroads; important for travellers through the area.

Townscape/Villagescape/Landscape Interest

Positive, landmark building at a historic crossroads in an otherwise open area.

Dingle House			
Birmingham Road	B31 4UE	Alvechurch	BDC ID ALV057

Description / Summary

C19th century farmhouse and farmstead with unconverted outbuildings.

Age, Authenticity and Rarity

Assumed early C19th, well preserved including unhorned timber sash windows; extension to side is subservient and does not detract.

Architectural Interest

Farmhouse appears to follow Georgian fashion, with 3 symmetrical bays, and a low-pitched, hipped slate roof. Windows have moulded cornices and are 2/2 sashes without horns, possibly original. Central door has moulded cornice and pillaster surround.

Historic Interest

No known notable associations or inhabitants.

Townscape/Villagescape/Landscape Interest

Positive contribution to landscape as a partially preserved farmstead.

Farmhouse and outbuildings at Brookhouse Farm			
Stonehouse Lane	B48 7BB		BDC ID ALV058

Description / Summary

C19th, three-storey farmhouse with unconverted outbuildings.

Age, Authenticity and Rarity

Assumed early C19th original; substantially rebuilt in 1858 (date stone), including farmhouse, but probably retained some parts of original outbuildings. Farmhouse is modernised but retains overall form; three-storey height is rare. Rear workshop has unusual industrial character, rare in area.

Architectural Interest

Three storey, three bay painted brick farmhouse with clay tiled, gabled roof with brick end stacks. Windows are all modern, with segmental arches, and central door has later porch on brick pillars. Rear workshop has large, multipane metal windows at ground and first floor, with timber shuttered openings to the centre, all under polychromatic, segmental arches.

Historic Interest

No known notable associations or inhabitants.

Townscape/Villagescape/Landscape Interest

Positive contribution to landscape as a partially preserved farmstead.

Farmhouse, Woodlands Farm (Woodlands)				
Chapel Lane	B48 7QJ	Rowney Green	BDC ID	ALV059

Description / Summary

C19th farmhouse and farmstead with unconverted outbuildings.

Age, Authenticity and Rarity

Assumed to be C19th, very fine and well preserved farmhouse. Adjacent barn is timber framed and likely to be earlier.

Architectural Interest

Two storey plus attic with two dormers in clay tiled roof with brick end stacks. Three bays with 8/8 sashes to both floors of right and left bays; central bay has infilled first floor window and 6/6 sash to ground floor, all horned. All windows have plaster quoin surrounds, ground floor also with drip moulds. The adjacent barn has visible queen post truss to the roof, with timber box-frame to first floor; ground floor not discernible but possibly a rendered masonry base.

Historic Interest

No known notable associations or inhabitants.

Townscape/Villagescape/Landscape Interest

Positive contribution to landscape as a partially preserved farmstead.

Lea End House				
Lea End Lane	B48 7AY	Lea End	BDC ID	ALV060

Description / Summary

C18th farmstead with later farmhouse and unconverted outbuildings.

Age, Authenticity and Rarity

C18th origins, west barn probably original as it shows remaining elements of timber frame. Farmhouse is later, Arts & Crafts character, probably late C19th but well preserved.

Architectural Interest

Two storey brick farmhouse with banded, clay tiled roof. Roughly H-plan with projecting left gable, flush right gable and secondary projecting gable off-centre. Entrance door is off-centre to right, adjacent to giant brick stack. Windows are all casements with a unique, beaded profile to transoms and mullions and have brick drip moulds over. Main entrance and seconary doors both have four-centred brick arches over.

Historic Interest

No known notable associations or inhabitants.

Townscape/Villagescape/Landscape Interest

Positive contribution to landscape as a partially preserved farmstead; landmark building on Lea End Lane.

Peacock Cottage			
Icknield Street	B38 0EH	Forhill	BDC ID ALV061

Description / Summary

C19th blacksmith's shop, now dwelling, with unconverted outbuilding.

Age, Authenticity and Rarity

Early C19th, maybe coeval with Peacock Inn adjacent, as they have some similar detailing. Modernised windows and doors, but form is well preserved.

Architectural Interest

Two storey brick cottage with half dormers at first floor. Ground floor windows have projecting brick drip moulds, matching the Peacock Inn. Projecting entrance porch has four-centred brick arch.

Historic Interest

Noted as house, blacksmith's shop and garden on 1842 Tithe apportionment.

Townscape/Villagescape/Landscape Interest

Positive contribution to crossroads area as a secondary landmark, adding to group value with the Peacock Inn.

20 & 22			
Bear Hill	B48 7JX	Alvechurch	BDC ID ALV062

Description / Summary

Late C19th cottages.

Age, Authenticity and Rarity

Built circa 1882, very well preserved externally, a rare example of simple domestic work by John Cotton.

Architectural Interest

Designed by John Cotton, symmetrical pair with a shared central brick stack from a plain tiled roof. Each cottage has a gable with timber-modillioned verges on moulded timber barge boards. First and ground floor windows have four-centred, chamfered brick.

Historic Interest

No known notable associations or inhabitants.

Townscape/Villagescape/Landscape Interest

Positive contribution to continuous row along Bear Hill; understated but very well detailed.

The Swan Public House				
Swan Street	B48 7RP	Alvechurch	BDC ID	ALV063

Description / Summary

C19th public house.

Age, Authenticity and Rarity

Mid-C19th, well preserved externally.

Architectural Interest

Four bays with wagon door to southern end and two canted bays either side of the entrance, which itself has a volute-bracketed cornice over. Upper floor windows are 4/4 sash with shallow, segmental arches.

Historic Interest

Historic communal importance to village.

Townscape/Villagescape/Landscape Interest

Positive contribution to streetscape, stands out as a public building among a mainly residential street, but continues the sense of enclosure.

Fairfield				
Radford Road	B48 7ST	Alvechurch	BDC ID	ALV064

Description / Summary

Early C20th detached dwelling.

Age, Authenticity and Rarity

Built in 1906, appears to have modern windows but otherwise well preserved, a rare example in area of Arts & Crafts at this scale.

Architectural Interest

Designed by Gerald McMichael and faced in what is described as 'purple' brick. Arts & Crafts in character, with two gable projections and a low, sweeping roof with dormers at first floor and attic level. The entrance door has a stepped, rounded arch and there are two substantial stacks arising towards the southern end.

Historic Interest

No known notable associations or inhabitants.

Townscape/Villagescape/Landscape Interest

Located in a largely open area, it contributes positively to the landscape as a unique, landmark building.

Hopwood House Inn			
Birmingham Road	B48 7AB	Hopwood	BDC ID ALV065

Description / Summary

C19th public house associated with development of Hopwood Wharf.

Age, Authenticity and Rarity

Built in 1867, the building has been substantially extended to the south and west, although its principal canal-facing façade remains legible.

Architectural Interest

Simple, gabled rectangle form, with 2/2 sash windows and flat, rubbed brick arches and two canted bays to the ground floor. The roof ridge has decorative crest tiles, but these may be replicas as the main roof slates are not original.

Historic Interest

Historic communal importance to village and to the development of the canal and its users.

Townscape/Villagescape/Landscape Interest

Forms gateway with cottages opposite, marking location of canal/road intersection and the beginning of the southern portion of the village.

Wast Hills House			
Wast Hills Lane	B38 9ET	Alvechurch	BDC ID ALV066

Description / Summary

Early C20th mansion built for W.A. Cadbury.

Age, Authenticity and Rarity

Built in 1905, the building has been altered and adapted but its overall form and character remain. Rare for its size and period.

Architectural Interest

Designed by Arthur E. McKewan, with a matching lodge adjacent to the access. The house is of roughcast over brick with sandstone dressings, diamond patterned gables and green slate roofs, rather like over-scaled Voysey. It has two storeys with attic and a spinal corridor to each floor with rooms at either side. The entrance front has a series of three gables at left and the single-storey service court at right. The fenestration is of two and three-light casements with stone surrounds and there are inserted C20th windows to the first floor. The doorway is at far left. It has a cambered arch with a keystone and to the immediate right of this there is a datestone which is inscribed "C / WA+EH / 1905". To right of this are two conjoined gables, the left hand one of which has a projecting C20th extension to the present dining room with a flat roof at ground floor level with four-light window. The kitchen court has a hipped roof with a louvred bellcote. The entrance hall has an inglenook fireplace with oak panelling, polychromatic tiling and a copper hood to the fire and fixed benches. There are stained glass windows to the inglenook showing a ship [probably of 1930s date] and to the heads of the basket-arched lights of the screen which divides the entrance lobby from the seating area. A broad spinal corridor at ground floor level has slender vertical panels to the walls which extend up to a plate rack and have niches with hood moulds and projecting shelves with brackets. The entrance hall staircase is of open-well design. The newel posts are of square section with carved foliage to the corners and caps. The study has fitted shelves, drawers and cupboards of mahogany. The mezzanine landing of the later [1910] staircase, at west, has a mullioned and transomed window of three lights including panels of Pre-Raphaelite-influenced design. Several of the ceilings at ground floor and first floor levels have panels with foliage in relief.

Historic Interest

Built for William Adlington Cadbury of the prominent local Quaker family. It was initially intended as a summer house for the family, who continued to also live at Edgbaston. Improvements in the roads between Wast Hills and Bournville and the purchase of a motor car made it possible to live at Wast Hills all year round and additions were built in 1910, also by McKewan. The Cadbury family gave the house to the University of Birmingham in 1968 and it was used as a conference centre until shortly before 2007.

Townscape/Villagescape/Landscape Interest

Despite its size, the dwelling is well concealed from public view, nevertheless it makes a positive contribution to the landscape as a landmark building.

Bordesley Hall			
The Holloway	B48 7QA	Rowney Green	BDC ID ALV067

Description / Summary

C18th hall and its former gardens and park.

Age, Authenticity and Rarity

C18th hall with possible earlier origins for the original park. The hall was heavily modified, extended and its immediate setting developed in the C20th, however much of this has now been removed to make way for a residential development.

Architectural Interest

The southeast elevation is of most interest and comprises two storeys divided into five bays, with a projecting central bay with entrance portico under, it appears, a copper roof. First floor windows are 8/12 horned timber sashes and ground floor 12/12 to match. There are stone details such as a square string course and moulded cornice, but most detailing is lost due to the fact the building has been roughcast rendered. A raised forecourt is laid out in front of this elevation, from which there are restricted, but still available in glimpses, views out across the landscape, including the hall’s former parkland and beyond.

Historic Interest

The hall's origins are associated with Lord Foley, and the land is thought to have originally been part of Bordesley Abbey's estate, sold to Edward Lord Windsor in the sixteenth century, following the Dissolution. A number of associated farmhouses and barns in the area also add to the historic group value of the Bordesley estate.

Townscape/Villagescape/Landscape Interest

The landscaped park has been eroded and subdivided and a tree belt south of the Hall now obscures much of the view to and from the Hall and its former parkland landscape, however views to the southeast remain possible, particularly in winter months when the deciduous trees shed their leaves. Despite erosion, there remain untouched pockets of the nineteenth century parkland, visible from the site and identifiable in aerial photography. This includes small stands of trees, ponds, boundary positions and the scar of one of the historic footpaths through the park.

Canadian War Memorial				
On land close to the corner of Rown		Rowney Green	BDC ID	ALV068

Description / Summary

A small plaque with the following wording, ‘THIS MAPLE TREE WAS PLANTED TO REMEMBER
FO H H BARTON
PO G J GALLAGHER
Sgt CRG LONG
PO J H MAGNES
Sgt A J O’Neill
OF THE ROYAL CANADIAN AIR FORCE WHO LOST THEIR LIVES WHEN THEIR WELLINGTON BOMBER CRASHED AT ROWNEY GREEN ON 9 NOV 1943
‘’WE WILL REMEMBER THEM’’
Alvechurch Ex-servicemen Association 2007
It is mounted on the ground adjacent to a Maple Tree

Age, Authenticity and Rarity

A modest, early 21st century memorial, which remembers the Canadian airmen killed when their plane crashed in Rowney Green during the Second World War.

Architectural Interest

Historic Interest

Commemorates a significant event from the Second World War which occurred in Rowney Green

Townscape/Villagescape/Landscape Interest

Belbroughton Primary School				
Bradford Lane	DY9 9TF	Belbroughton	BDC ID	BEL001

Description / Summary

School building by J.A Chatwin constructed from brick with clay tiled roof in a Gothic style.Vigorous diapered red and blue brick work with a central stepped gable with chimney. Bold, circular cloackroom apse left of porch with conical roof. Large modern extension to the rear.

Age, Authenticity and Rarity

Though the school building has been significantly extended to the rear, it is considered that the principal elevation fronting Bradford Lane retains its authenticity and is a good example of J.A Chatwin's work.

Architectural Interest

Described by Pevsner as being ‘Gothic, 1876, nothing special’. However, it is considered that the front, principal elevation of the building is of high architectural merit. Was designed by the architect J.A Chatwin who went on to become the principal architect for Lloyds Bank, amongst other things. He designed a number of buildings in Birmingham and the Midlands, many now listed. The school was built by Mr Thomas Baylis of Belbroughton who also built the school at Fairfield.

Historic Interest

The school is illustrative of an important aspect of both local and social history and serves a5s a reminder of the development of the settlement in that it usurped 'The Old Schoolhouse' on Church Hill.

Townscape/Villagescape/Landscape Interest

In a prominent location on the route into the Belbroughton Conservation Area and is a striking local landmark.

22, 24 & 26			
Church Hill	DY9 0DT	Belbroughton	BDC ID BEL002

Description / Summary

C18th and originally built as almshouses and converted to a parish workhouse in 1823, with it becoming sub-divided into a beerhouse and a shop with associated houses following its sale in 1837. IT stayed as a public house until the 1970s when it was converted into a restaurant and finally to a single dwelling circa 2001. Sitting over two storeys and five principle bays and constructed in red brick, reading from left: tripartite timber casement with leaded lights set under arched lintel with similar to first floor set under dentilled eaves; door with canopy, now closed; double casement to ground and first floor; main entrance door set under flat bracketed canopy with pilasters; double casement to ground and first floors. Right hand three bays consist of a pair of large 4/4 fixed lights with smaller lights at top, separated by door now disused, each with timber and leaded canopies. Tripartite casements to first floor. Shallow hipped roof covered in blue slate with one double brick stack to right centre of roof.

Age, Authenticity and Rarity

The building is an authentic and rare example of an Almshouse dating to the C18th.

Architectural Interest

Its simple and understated architecture with modern, but sympathetic, windows, retaining original slate roof. Large windows to right-hand bay are likely to be later inserts from the use as a pub/ beerhouse.

Historic Interest

The building is illustrative of changing social needs within the parish. The building was originally a poor house before being used as a Workhouse in 1823. By 1837 the workshouse was sold following the new Bromsgrove Union. It then became a public house, then restaurant and is now used as a private dwelling.

Townscape/Villagescape/Landscape Interest

Old School House, 28			
Church Hill	DY9 0DT	Belbroughton	BDC ID BEL003

Description / Summary

Former school house now residential. Four bays and two storeys with principal elevation comprising a tile gable roof with dentilated brick cornice at eaves. Two chimney stack to the south end of roof. Central bay features projecting first floor with flat roof, stone carved 'The Old School House/ Circa 1750' positioned under the eaves. Constructed of local red brick with sandstone end quoins. Mullioned stone window openings with modern leaded casements. Three point ogee stone arched doorway. Originally built as single storey and enlarged c.1850. Remained in use as a school until 1963.

Age, Authenticity and Rarity

The building retains its authenticity and has had minimal alterations, although some restoration work was carried out in the 1990s.

Architectural Interest

The building is a good example of Gothic architecture within the parish constructed in sandstone.

Historic Interest

Remained in use as a school until 1963 demonstrating a building of historic social importance due to its longstanding use as a public building. The school was replaced in 1873-4 by Belbroughton Primary School on Bradford Lane.

Townscape/Villagescape/Landscape Interest

Building is in a prominent location on the top corner of Church Hill. Noted as a landmark building in the Conservation Area Appraisal.

Outbuilding to Fieldhouse Farm			
Dark Lane	DY9 9SS	Belbroughton	BDC ID BEL004

Description / Summary

Outbuilding to Field House Farm. Unusually detailed elevation fronting Dark Lane with 6 matching, slender chimneys, ornated gablets, diapered brickwork and a corbelled brick corner.

Age, Authenticity and Rarity

A traditional outbuilding with an unusually high level of detail and craftsmanship.

Architectural Interest

It displays a high level of architectural detailing which is unusual for an outbuilding.

Historic Interest

Townscape/Villagescape/Landscape Interest

The building forms an essential part of the street scene giving the north-eastern end of the village a sense of place.

Outbuilding east of 8 Drayton Road				
Hackmans Gate Lane	DY9 0DX	Belbroughton	BDC ID	BEL005

Description / Summary

Red brick construction with gabled tile roof with slate ridge. Diamond pattern formed from honeycomb brickwork in the eaves of the south-west elevation. It has dentilated eaves cornices on north-west and south-east elevations. Rectangular window on south-east elevation with deep surround and a sash window. At least late C18th. Has appearance of a mill building. Additional building is behind a wall which has bricked up segmental arch openings.

Age, Authenticity and Rarity

Unusual late C18th outbuilding, appears relatively unaltered in a prominent position overlooking Belbroughton. It could have been part of the mill complex that sat by the brook, and would have included Brook House and the Malt House which are Grade II listed.

Architectural Interest

Good degree of architectural quality for a modest outbuilding.

Historic Interest

Part of the mill which was located adjacent to the watercourse on Drayton Road.

Townscape/Villagescape/Landscape Interest

The structure is a dominant feature in the landscape when walking along Drayton Road due to its prominence atop the nearby hill.

The Old Chapel				
Forge Lane	DY9 0DT	Belbroughton	BDC ID	BEL006

Description / Summary

Former Primitive Methodist chapel of red brick construction with slate roof and large modern extension to the east. Now in commercial use. Each of the original elevations comprise two large double height windows with rounded brick arches and thick glazing bars, sat on stone cills. The principal elevation features a central timber door with a simple stone surround and timber roof. There is a defaced stone plaque which the HER suggests dates the building to 1850s/60s. Building present on the 1882 OS map.

Age, Authenticity and Rarity

Rare surviving example of Primitive Methodist church within the parish.

Architectural Interest

Historic Interest

The building displays a strong aspect of the area's religious history - Primitive Methodism was a major movement in England from c.1810 until the Methodist Union in 1932. It is also an example of the kind of religious nonconformity often associated with manufacturing areas.

Townscape/Villagescape/Landscape Interest

The Talbot				
Hartle Lane	DY9 9TG	Belbroughton	BDC ID	BEL007

Description / Summary

Small public house with two pile plan. Bay windows along ground floor. Modern hipped porch located at both entrances. Windows with segmental arches along 1st floor gable end. Evidence of internal timber framing.

Age, Authenticity and Rarity

The building remains largely intact and is is good condition with few alterations. It is a good example of a C17th/18th public house within the district.

Architectural Interest

Historic Interest

Noted on the 1840 Tithe map and the 1883 OS map as 'Talbot Hotel'. It is a long surviving public house.

Townscape/Villagescape/Landscape Interest

Sits on a prominent road intersection within Belbroughton with approaching views from the east, south and west.

44				
High Street	DY9 9SU	Belbroughton	BDC ID	BEL008

Description / Summary

A two storey building of brick construction with clay hipped roof, sat on a blue engineering brick plinth. It is noted as being a police station on the 1902 Second Edition OS map, but now in residential use. Principal elevation fronting onto the High Street is symmetrical, comprising a central timber door with painted stone surround and prominent key stone. To either side of the door is a modern window in original openings, with painted stone shouldered lintels and central key stones and painted stone cills. Windows are repeated to the first floor with cambered brick arches. Building also has original retaining wall.

Age, Authenticity and Rarity

Aside from the modern Upvc casement windows, the building is largely authentic to its construction, with original features and planform remaining. The building is a rare example of a municipal building from the 19th century within the village.

Architectural Interest

Historic Interest

The building, as a former police station,displays an important aspect of the area's social and political history.

Townscape/Villagescape/Landscape Interest

Ye Old Horse Shoe Inn			
High Street	DY9 9ST	Belbroughton	BDC ID BEL009

Description / Summary

Late C18th or early C19th . Recorded on the Tithe Map (1840) as Beer house, shop, house and garden. Tile gable roof with segmental arch window openings. 19th century bay window. Chimney stacks have string bands.

Age, Authenticity and Rarity

Dated to the C18th and recorded on 1840 tithe map as Beer house, shop, house and garden. Few alterations to the property allowing for the retention of the original built form identified on the original OS maps.

Architectural Interest

Historic Interest

A surviving example of a C18th public house. Provides an insight into the social history of the area.

Townscape/Villagescape/Landscape Interest

A visible landmark located on the High Street.

4-10			
High Street	DY9 9SY	Belbroughton	BDC ID BEL010

Description / Summary

A row of modest C19th dwellings constructed in brick beneath pitched slate roofs. The original window openings survive, although all windows have been replaced in Upvc.

Age, Authenticity and Rarity

Modest C19th dwellings originally constructed for scythe-making workers, a major industry in Belbroughton at this time.

Architectural Interest

Slate gable roof with chimney stacks projecting through ridge. Dentilated brick cornice at eaves. Windows have segmental arch openings and stone cills. The through-passage has a semi-circular arch. Early C19th with top of chimney stacks extended in blue engineering brick. Building present on 1840 Tithe map.

Historic Interest

Historically home to the scythe workers at the local mill. A surviving remnant of the scythe-making industry of Belbroughton

Townscape/Villagescape/Landscape Interest

Former Nash Works				
Forge Lane	DY9 9TD	Belbroughton	BDC ID	BEL011

Description / Summary

Medium sized brick building in English Garden Wall bond with dentilation at eaves. Large bay window on ground floor, modern with Upvc windows. Large window on 1st floor that appears to be an infilled loading bay door.

Age, Authenticity and Rarity

Evident on 1840 Tithe map as Waldron scythe mill and associated buildings and 1890 OS maps as Nash Works. Largely demolished with one surviving building. The site has largely been turned into a residential development.

Architectural Interest

Historic Interest

The last surviving remnant of the Nash Works. Scythe works had been established on this site as early as 1774 by Thomas Aston Waldron and had been a common industry in Belbroughton. Bought in 1874 by Isaac Nash the manufactory would then be known as the Nash Works and was the main source of employment within Belbroughton.

Townscape/Villagescape/Landscape Interest

Dordale Cottage				
Dordale Road	DY9 0BA		BDC ID	BEL12

Description / Summary

C17th dwelling - single storey with attic of timber-framed and brick construction with large central brick chimney stack between two gables. Modern windows and porch.

Age, Authenticity and Rarity

The building largely dates to the C17th but some parts of the building, which are still identifiable are thought to be older, making this a rare example of an early timber-framed building.

Architectural Interest

The building is a rare example of timber-framing of this date.

Historic Interest

The building is visible on the Tithe maps and 1880s OS maps, although it clearly predates both.

Townscape/Villagescape/Landscape Interest

The building is clearly visible from Dordale Road

Dordale Barn				
Dordale Road	DY9 0BA		BDC ID	BEL13

Description / Summary

C17th former farm building now converted to dwelling - single storey with attic and timber-frame and brick nogging construction. A simple rectangular planform with tie-beams and studs exposed on end gables. Roof is gabled with clay tiles. Fenestration is modern, a single door on the side elevation for the entrance.

Age, Authenticity and Rarity

The building dates from at least the C17th with C18 brick nogging. The timber-framed elements of the building are identifiable and give the building character making it a good example of an earlier timber-framed buidling in the parish.

Architectural Interest

The building is a good example of timber-framing dating from the C17th.

Historic Interest

Once a farm buidling now converted to dwelling. Likely to have been associated with Dordale Farm directly to the north. The barn illustrates the history of the area.

Townscape/Villagescape/Landscape Interest

The building is visible from Dordale Road and its architectural and historic quality contribute positively to the character of the area.

Broomhill Farm				
Dordale Road	DY9 0AZ		BDC ID	BEL14

Description / Summary

A Victorian threshing barn, unconverted. Brick beneath a pitched concrete tiled roof. Ventilation holes to the front elevation, original double doors. Some attached barns also brick beneath pitched concrete tiled roofs.

Age, Authenticity and Rarity

C19th threshing barn with attached farm buildings. Evident on 1880s OS maps.

Architectural Interest

Good venacular architectural design.

Historic Interest

A good example of a surviving threshing barn which has not been converted to residential use.

Townscape/Villagescape/Landscape Interest

33				
Brook Road	B61 9JZ	Fairfield	BDC ID	BEL15

Description / Summary

Mid C19th property. Tiled gable roof with dentilated brick cornice at the eaves. Heavily rendered exterior. Square stacks at gables with string course close to top, vent tiles in ridge. Former nailers cottage.

Age, Authenticity and Rarity

Mid-C19th nailers cottage. Evident on First edition 1883 OS map

Architectural Interest

Historic Interest

Former nailers cottage linked with the historic nailing industry of Belbroughton and Bromsgrove

Townscape/Villagescape/Landscape Interest

25 & 27				
Brook Road	B61 9JZ	Fairfield	BDC ID	BEL16

Description / Summary

Mid-late C19th with C20th extensions to north-east and to rear. Appear as a row of four cottages on the 1901 OS map, although a building is also present as a house, garden and shop on the 1840 Tithe map. Now converted to two. Possibly originally single storey with converted roof space. No 25 has dentilated eaves cornice. Chimney stacks have string bands close to top.

Age, Authenticity and Rarity

Mid-late C19th with C20th extensions clearly shown on the 1901 OS map.

Architectural Interest

Historic Interest

Former nailers cottage linked with the historic nailing industry of Belbroughton and Bromsgrove

Townscape/Villagescape/Landscape Interest

Hagley Hill Farm			
Mearse Lane	DY9 9YE		BDC ID BEL17

Description / Summary

A range of farm buildings constructed around a loose courtyard fronting to the roadside. Evident on the 1830 Ordnance Survey map but most likely pre-date this, and remain in the same planform. Main barn to the roadside has been heavily altered with steel frame to remains of brick wall, with smaller barns gable-end facing on to the road, both most likley of late C18th to early C19th date. Main range, forming the western and rear elements of the loose courtyard: western range has main barn with waney-edged oak boarding to side elevations with two large doors to the western elevation and with a tiled roof. Single bay to the gable elevation of C17th timber-framed construction with king-post truss visible with brick nogging - possibly earlier element. Northern range of single storey with central carriage arch all constructed in brick - possibly stables. Farmhouse dates to 1960s/ 1970s and is of no interest.

Age, Authenticity and Rarity

A historic farmstead of unconverted farm buildings includes a timber-framed C17th century barn with king post truss visible on the northern gable, and early C19th brick barns.

Architectural Interest

Historic Interest

A extant farmstead with unconverted buildings still used for agriculture. Timber-framing is still evident. Modern alterations have been made along separate range running along the road with C19th wall with C20th buttresses

Townscape/Villagescape/Landscape Interest

Barn at Money Lane Farm			
Money Lane	B61 0QY		BDC ID BEL18

Description / Summary

A threshing barn with a segmental arch and honeycomb brickwork for ventilation and dentilled eaves. Large opening partially blocked. Clay tile roof. Later C19th extension to side with segmental arched doorway with stable door. Both main building and side wing have been re-roofed in plain red clay tiels.

Age, Authenticity and Rarity

Buildings present on 1839 Tithe map as a complete farm. Buildings occupy the same footprint and form as that on historic maps with little evidence to suggest significant alterations.

Architectural Interest

Historic Interest

A largley intact farmstead that has remained unconverted. The form and historic nature of the site is largely still legible.

Townscape/Villagescape/Landscape Interest

Outbuilding at Money Lane Farm				
Money Lane	B61 0QY		BDC ID	BEL19

Description / Summary

C19th outbuilding at Money Lane School Farm. Red brick, single storey with tile gable roof with dentilated eaves at the gable. Square window opening inserted in gable end with no window. Roof covered in dark red plain clay tiles.

Age, Authenticity and Rarity

Building is present on 1893 OS but not on earlier Tithe maps.

Architectural Interest

Historic Interest

Part of a largley intact C19th farmstead that has remained unconverted to residential use. The form and historic nature of the site is largely still legible.

Townscape/Villagescape/Landscape Interest

Money Lane Farmhouse				
Money Lane	B61 0QY		BDC ID	BEL20

Description / Summary

Early C19th brick farmhouse with tiled gable roof and chimney stack in each end gable. Stacks have string bands. Dentilated eaves cornice. Segmental arched windows flush with face of wall. Located to the north of the farm buildings, gable end to the road.

Age, Authenticity and Rarity

Building is present on 1839 Tithe map. Now in use as an educational farm as part of Chapmans Hill Farm.

Architectural Interest

Historic Interest

Part of a largley intact early C19th farmstead with outbuildings which have remained unconverted to residential use. The form and historic nature of the site is largely still legible.

Townscape/Villagescape/Landscape Interest

The Swan Inn			
Stourbridge Road	B61 9NG		BDC ID BEL21

Description / Summary

A two-storey public house of painted brick construction on a stone plinth. The pub is comprised of three adjoining buildings which decrease in height from south to north. The principal elevation which fronts the B4091 has a squared bay window to either side of the door at the ground floor, two of which are in the principal building and flank a central timber door which has a moulded timber surround and blocked fanlight. To the first floor of the principal building there are 2 modern, timber casement windows in what appear to be the original openings. There is a dentilated brick course to the eaves and to the gables. The second range, most likely originally a barn, has two further squared bay windows at ground floor with dentilled eaves. The final range sitting over a single storey has no window openings.

Age, Authenticity and Rarity

The building remains largely intact and is is good condition. It is a good example of a mid-C19th public house within the district.

Architectural Interest

Historic Interest

The building is present on the Tithe map as an 'Inn' and has remained in the same use throughout its life.

Townscape/Villagescape/Landscape Interest

The building is in a prominent location at the junction of Swan Lane and the B4091 Stoubridge Road.

Church of St Mark			
Stourbridge Road	B61 9LZ		BDC ID BEL22

Description / Summary

Church, built in 1853-4 by Benjamin Ferrey. Opened in 1857. Snecked sandstone, with pattered tiled roof. Nave and chancel in one, with south porch and west bell cote. Below the latter, five shafted lancets, the central one wider and blind. Otherwise the nave has plate tracery, the chancel lancets, the east end three stepped below a large rose. Inside each lancet pair is linked by an arcade with central shaft well detached from the wall. Tall arch-braced roof. Most furnishings survive, notably the sexfoil-shaped font and polygonal stone pulpit. The later re-set adjoining a low stone wall (meant to carry a wrought iron screen) by Webb and Grey, 1938. Communion rails c. 1916. Stained glass in east window 1949, by F.M Baker.

Age, Authenticity and Rarity

Prominent church along the Fairfield main road. Built in 1854 and has remained in good condition.

Architectural Interest

Built by Benjamin Ferrey. A very good example of victorian church building in the medieval styles with early english lancet windows and plate tracery.

Historic Interest

Associated with area's religious history and and victorian church building at the time.

Townscape/Villagescape/Landscape Interest

Placed prominently along Stourbridge Road. A signifiance building within the village at a central location

War Memorial

Stourbridge Road	B61 9LZ		BDC ID BEL23

Description / Summary

A WW1 stone memorial Latin cross with 3 octagonal steps and octagonal plinth and shaft. The memorial was designed by the Bromsgrove Guild and was unveiled by General Sir Percy Radcliffe. The inscription reads: "To the Glory of God and in Memory of the Men of Fairfield who gave their lives for God, King and Country in the Great War 1914 - 1919 and Lest We Forget".

Age, Authenticity and Rarity

The memorial is a good, complete example of a WW1 war memorial desinged by the Bromsgrove Guild.

Architectural Interest

The memorial was designed by the Bromsgrove Guild. The Bromsgrove Guild was founded by sculpter Walter Guilbert. Their most well known commissions were the gates of Buckingham Palace and the Liverbirds in Liverpool.

Historic Interest

The memorial is a symbol of collective memory associated with the memorial of World War 1.

Townscape/Villagescape/Landscape Interest

Located in a prominent position on the main road by the village hall.

Loop-holed walls

Stourbridge Road	B61 9LZ		BDC ID BEL24

Description / Summary

Two red brick walls with loopholes from WWII. Walls are constructed in red brick with blue brick copings, with walls most likely dating to the mid-C19th with loop-holes formed by removed bricks. Located on the southern and northern side of the Brook Road and Stourbridge Road juction.

Age, Authenticity and Rarity

The loopholed walls are both locally and nationally rare examples of Home Front fortification from World War Two.

Architectural Interest

The defensive features of the walls are architecturally rare in both Bromsgrove and nationally and are a good example of loopholes that are still fully intact and unaltered.

Historic Interest

The walls are a reminder of the Home Guard fortifications that the country went through during World War Two.

Townscape/Villagescape/Landscape Interest

The walls are located on a prominent junction within the settlement.

Fairfield First Primary School			
Stourbridge Road	B61 9LZ		BDC ID BEL25

Description / Summary

Late C19th primary school. School hidden behind church. Red brick with tiled and gabled roof. Segmental arch windows with blue brick openings.

Age, Authenticity and Rarity

Building present on 1882 OS map with prominent Victorian architectural styles. Similar to Belbroughton Primary School constructed around a similar time.

Architectural Interest

Similar in appearance to Belbroughton Primary School. While not designed by J. A. Chatwin, it is possibly inspired by his design for Belbroughton. Front elevation shows a high degree of architectural merit.

Historic Interest

The school is illustrative of an important aspect of both local and social history

Townscape/Villagescape/Landscape Interest

Wildmoor Primitive Methodist Chapel			
Top Road	B61 0RD		BDC ID BEL26

Description / Summary

A former Jubilee Primitive Methodist chapel of red brick construction designed by Mr. Ewan Harper of Barnt Green and Birmingham and built by Mr Baylis of Belbroughton. The principal elevation fronting Top Road comprises a central timber door with a stained glass window directly above to the first floor. Stained glass depicts a shepherd and sheep with the statement "In Memory of Mr and Mrs O'Lees". Above this window is a carved stone which reads "Jubliee Methodist Chapel" with Jubilee arising from the Jubilee of the Primitive Methodist Missionary Society. There is a decorative, stepped brick course to the eaves and a small lean-to to the north.

Age, Authenticity and Rarity

The building is rare surviving example of a Primitive Methodist church within the parish and remains in its original planform with little to no alterations.

Architectural Interest

The building was designed by the prominent Birmingham architect Mr. Ewan Harper.

Historic Interest

The building displays a strong aspect of the area's religious history - Primitive Methodism was a major movement in England from c.1810 until the Methodist Union in 1932. It is also an example of the kind of religious non-conformity often associated with manufacturing areas.

Townscape/Villagescape/Landscape Interest

The Wildmoor Oak PH			
Top Road	B61 0RB		BDC ID BEL27

Description / Summary

Listed on OS maps as Royal Oak PH dating from at least 1883 although the building appears to be present on the 1839 Tithe map as a house and garden. Original range on north side running east to west. East gable is higher and a much steeper pitch. Possibly the original building with the lower gable as an extenstion. Three chimney stacks. One of each gable end and a third central through the roofline. Slate tile roof. Multiple modern extensions to the rear.

Age, Authenticity and Rarity

Evident on the 1883 OS maps as Royal Oak PH, it has retained the original range running east to west and its use as a public house. Modern extensions to the south have impacted upon its completeness and significance.

Architectural Interest

Historic Interest

A public house that has remained in use for the previous 150+ years. A isolated building indicating the rural history of the area and the social history,

Townscape/Villagescape/Landscape Interest

Prominent position at the bottom of Top Road and as a social landmark that has existed within the landscape for over 150 years.

Wildmoor Mill Farm			
Mill Lane	B61 0BX		BDC ID BEL28

Description / Summary

A three-storey mill building of rendered brick construction, recorded on the 1839 Tithe map as 'Wildmoor Corn Mill' with mill house, stable and garden. It has a clay tiled roof with painted brick work and a dentilated course to the eaves. There are modern windows throughout the building in what appear to be the original openings with those to the ground and first floor having segmental arches. There is a central window to the second floor under a semi-circular arch. Between the first and second floor is a clock. Adjoining the building to the south is a single storey range which is visible from from the Tithe map onwards, though is likely to be a later addition.

Age, Authenticity and Rarity

The building represents a good example of a relatively unaltered late eighteenth century corn mill, in terms of legibility and plan form.

Architectural Interest

The building is a surviving example of a corn mill that is still architecturally recognisable as its former use.

Historic Interest

The building holds evidence for its former industrial use as a corn mill and is recognisable for its association with the growth of mill industries in the area.

Townscape/Villagescape/Landscape Interest

The building is located on 'Mill Lane' which it can be assumed was named after Wildmoor Corn Mill.

Former Primitive Methodist Chapel			
Chapel Lane	DY9 9XJ		BDC ID BEL29

Description / Summary

A former Primitive Methodist chapel of red brick construction with blue engineering brick diapering, built in 1873. The principal elevation fronting Chapel Lane has a central, projecting porch with a modern window rather than a door with a semi-circular arched head and a blue brick cill. There are semi circular arched window openings with blue brick detailing above on the front and side elevations, with replacement windows. There is a dentilated brick course to the gable and a trefoil shaped ventilator opening in a stone rectangle in the gable apex. Now converted to residential use.

Age, Authenticity and Rarity

The building is good surviving example of a Primitive Methodist chapel within the parish. Its original plan form is legible, despite additions to the side and rear.

Architectural Interest

Historic Interest

The building displays a strong aspect of the area's religious history - Primitive Methodism was a major movement in England from c.1810 until the Methodist Union in 1932. It is also an example of the kind of religious non-conformity often associated with manufacturing areas.

Townscape/Villagescape/Landscape Interest

The building is located on 'Chapel Lane' which it can be assumed was named after the Methodist chapel, in a prominent position.

The Ram House			
Hartle Lane	DY9 9TN		BDC ID BEL30

Description / Summary

A red brick building described on the Tithe map of 1840 as Mill, Piggery and Stables. The building is present on the 1st edition 1880s OS map as part of Bell End Mill and described as a Hydraulic Ram from the 2nd edition 1901 map. The principal elevation fronting Hartle Lane has a central, modern timber door in an original opening under a segmental arch. This is flanked by two modern windows which are also in original openings under segmental arches with blue engineering brick cills. The gable end to the west comprises a large, 8-paned modern window which sits under a large timber lintel and segmental brick arch.

Age, Authenticity and Rarity

The building is a surving example of a hydraulic ram house that remains in good condition and is associated with the milling industry within the parish.

Architectural Interest

The building is a surviving example of a hydraulic ram house that is still architecturally recognisable as its former use.

Historic Interest

The building is evidence of the areas former industrial life which is associated with Bell End Mill.

Townscape/Villagescape/Landscape Interest

East Lodge			
Hartle Lane	DY9 9UL		BDC ID BEL31

Description / Summary

A two-storey building of red brick construction with decorative blue engineering brick diapering. Decorative tiled roof with bands of fish-scale tiles. Multi-gabled roof to the northern elevation with a single brick chimney stack to the northern gable end. The principal east elevation has a large, steep gable which comprises a central bay window (now with Upvc) to the ground floor and a modern Upvc window to the first floor in the original opening with a shouldered stone lintel the details of which are repeated throughout the building. The lodge is associated with Bell Hall and was probably built during the rebuild of the Hall c.1847 (it not being present on the 1840 Tithe map).The retaining wall was rebuilt between 2010 and 2018 but the original design in blue brick with red brick detailing with stone copings was replicated.

Age, Authenticity and Rarity

It retains its Victorian Gothic character and legibility as a lodge house.

Architectural Interest

Possibly designed by Edward Smith of Oldwinsford in conjuction with Bell Hall, now listed Grade II, in a Victorian Gothic style.

Historic Interest

The lodge was built in conjuction with Bell Hall for Charles Noel who was the High Sheriff of Worcestershire. The existence of a pair of lodges to this property (see West Lodge) indicates its high status.

Townscape/Villagescape/Landscape Interest

The building is in a prominent position on Hartle Lane.

West Lodge			
Harlte Lane	DY9 9TP		BDC ID BEL32

Description / Summary

A two-storey building with modern cream render on north and east elevations with tile hanging on the side wing and west elevation. Main body of building is in half-cruciform plan with steep gables of clay tile with three rooflights on the north elevation. Extended to the west with a catslide roof to the north and tile hanging to the west in a restrained Arts & crafts style, although possibly constructed in the 1950s.

Age, Authenticity and Rarity

It retains some of its original character, and legibility as the other (most likely secondary) lodge to Bell Hall.

Architectural Interest

Historic Interest

The lodge was built to service Bell Hall, probably during the rebuilding c.1847. Although significantly altered and extended in the twentieth century it is still legible as a lodge to Bell Hall and the existence of a pair of lodges to this property (see East Lodge) indicates its high status.

Townscape/Villagescape/Landscape Interest

The building is in a prominent position on Hartle Lane.

22			
Hartle Lane	DY9 9TJ		BDC ID BEL33

Description / Summary

A two-storey white painted brick building to the east with a single storey timber-framed element to the west with white brick infill. Tile gable roof with tile gable dormers facing Hartle Lane. Windows have segmental arch openings. Large chimney stacks with string course and cornice. Single storey extension to the east (left) just below timber beam. C20th porch on north elevation.

Age, Authenticity and Rarity

The timber-framing on the single storey element to the west (right) shows evidence of age and is considerd to date from the C17th. Although remodelling has taken place, evidence of the original fabric is visible to the street elevation, and extensions have allowed the original planform of the dwelling to be understood. A rare example of a timber-framed house in Belbroughton.

Architectural Interest

A good example of a C17th building developed overtime. Showing clearly later additions and alterations such as dormers, porch and painted exterior.

Historic Interest

Townscape/Villagescape/Landscape Interest

Brookfield Farm			
Hackman's Gate Lane	DY9 0DL		BDC ID BEL34

Description / Summary

Two-storey brick farmhouse with incised render on gable ends. Two large chimney stacks, one on gable end and another on rear elevation. Stone lintels above windows and doorway with front elevation dominated by central projecting gable. Enclosed U-plan farmbuildings to the rear of the farmhouse with entrance through a large basket arch in the south side of the building. Built largely of red brick with a clay tile roof. Opposite building features door openings with segmental arches. A threshing barn is located in the mid-section of the plan. Late C19th with honeycomb brickwork for ventilation and diamond pattern ventilation in gable eaves, visable from the roadside.

Age, Authenticity and Rarity

An intact mid- to late C19th farmstead with farmhouse retaining an enclosed courtyard plan. Evident on 1882 1st edition OS maps of Belbroughton. Less than 50% loss of traditional building

Architectural Interest

A good example of a mid- to late C19th farmhouse and farmstead in an enclosed U-plan form.

Historic Interest

Building is visible on the 1882 1st Edition OS maps

Townscape/Villagescape/Landscape Interest

The building is one of few along Hackman's Gate Lane and sits prominently within the landscape

Coalyard Farm			
Heath End Road	DY9 9XH		BDC ID BEL35

Description / Summary

C17th timber-framed house with red brick infill and a tiled roof. One storey with an attic, three bays wide, with simple door assymetrically placed in centre. Single casement window to the left and right and assymetrical gable window. To the right single storey one bay extension. To the left there exists an C18th barn.

Age, Authenticity and Rarity

Dated to C17th with timber-framing and red brick infill. Evident on 1882 1st edition OS maps: house and barn are also recorded on the 1838 Belbroughton tithe. There has been a partial loss of traditional buildings.

Architectural Interest

Linear plan farmbuilding with farmhouse attached and is a rare occurance within Bromsgrove District and Worcestershire as a whole. The timber-framing construction indicates the historic architectural practices for construction and design.

Historic Interest

The building is an example of Belbroughtons rural history and agricultural practices.

Townscape/Villagescape/Landscape Interest

Hill Cottage			
Hockley Brook Lane	DY9 0AD		BDC ID BEL36

Description / Summary

L-Plan C19th brick cottage, painted white. Chimney stacks on both north and south gable ends. Dentilated cornices with segmented arches above windows. Timber porch with brick foundation. Clay tile roof. Has received little visible alterations to the front elevation compared with outline in 1884 OS map.

Age, Authenticity and Rarity

Dated to the mid-C19th. Evidence on the 1884 OS map, linked with brickworks and clay pit to the rear of the property.

Architectural Interest

Modest vernacular architecture, constructed in local materials.

Historic Interest

Visible on 1884 1st Edition OS map and likely connected with historic brickworks and clay pit in the neighbouring field.

Townscape/Villagescape/Landscape Interest

Hill Farmhouse				
Hockley Brook Lane	DY9 0AA		BDC ID	BEL37

Description / Summary

Has large stone chimney at rear of building topped with large brick stacks possibly star-shaped. Heavily rendered house exterior. Possibly C16th timber-frame partially rebuilt in brick and extended in C19th.Building present on 1840 Tithe map.

Age, Authenticity and Rarity

Dated to the C16th with timber-framing. Extended in brick and heavily rendered. Linked with the farmbuildings opposite and evident as Hill Farm on 1840 Tithe map.

Architectural Interest

Historic Interest

A partially complete farmstead with converted buildings retaining much of their form. Set within the historic context of the agricultural history of the area.

Townscape/Villagescape/Landscape Interest

The Milking Parlour, Hill Farm				
Hockley Brook Lane	DY9 0AA		BDC ID	BEL38

Description / Summary

U-plan farmstead with threshing barn, granary, hayloft and cart shed, all of which have been converted to residential use. Cart shed has been significantly altered and illegible.

Age, Authenticity and Rarity

Possibly dated to C17th but with C19th extensive rebuilding. Present on 1840 Tithe map. Buildings have been converted to residential buildings but retain much of their character and significance.

Architectural Interest

Basket arch with diamond-shaped brick piercing. U-shaped courtyard with detached farmhouse opposite. South cart shed has been altered significantly through residential conversion but main threshing barn preserves the character and significance of the farm.

Historic Interest

A partially complete farmstead with converted buildings retaining much of their form. Set within the historic context of the agricultural history of the area.

Townscape/Villagescape/Landscape Interest

The Furlongs			
Holy Cross Lane	DY9 9SJ		BDC ID BEL39

Description / Summary

Dating to the mid- to late C19th. Red brick construction with tiled gable roof with chimney through ridge. Dormer windows. Segmental head windows with shaped shoulders on second floor. Lintelstring band. Pointed stone arch entranceway. Rear courtyard retains much of its original form.

Age, Authenticity and Rarity

Mid- to late C19th. Present on 1st edition 1883 OS map and has retained its planform. Many original features remain such as the pointed arch entrance and the fenestrations. A mixture of modern and origninal window joinery. Unsympathetic modern extensions to the east and west of the building.

Architectural Interest

Good level of design and craftmanship present within the original building to create an impressive, complete Victorian country farmhouse.

Historic Interest

Townscape/Villagescape/Landscape Interest

Gorse Farm House			
Gorse Green Lane	DY9 9UH		BDC ID BEL40

Description / Summary

Gorse Farm, Belbroughton. Partially extant early to mid-C19th farmstead with converted buildings. Regular courtyard with multiple yards. The farmhouse is detached with gable on to the yard. There has been some loss of traditional buildings.

Age, Authenticity and Rarity

Early to mid-C19th farmhouse and farmstead. Present on 1840 Tithe map. The farmhouse has retained much of its form with little alterations, although the farmstead has suffered from partial loss of farm buildings; surviving farm buildings have been converted to residential dwellings.

Architectural Interest

Good level of architectural design evident in the farmhouse. High level of craftsmanship and design present. Looks to have maintained original sash windows.

Historic Interest

Evident on 1840 Tithe map with few alterations made to its built form. A good example of a C19th farmstead, illustrating the agricultural working methods of the time.

Townscape/Villagescape/Landscape Interest

Galtons Mill			
Galton Lane	DY9 9TS		BDC ID BEL41

Description / Summary

Historic C18th mill (now converted) of red brick construction with modern windows in original openings under segmental brick arches.There is a large, modern brick extension to the west and rear of the building. The HER suggests that the building was originally referred to as Savage's Mill and was used for grinding corn. By 1751 it was ownership was tranferred to Farmer and Galton and the mill was used for grinding gun barrels. By 1846 Isaac Nash rented the mill and it became a scythe factory. In 1870, the building was used as a grinding mill only and then closed in 1940. Grade II Listed Water Wheel on site.

Age, Authenticity and Rarity

The building is considered to date from the C18th, although a mill has been present here since the C16th making it is a rare surviving example of an historic water mill.

Architectural Interest

Historic Interest

The building has associations with Farmer and Galton and Isaac Nash, all of whom were important industrial figures in the West Midlands.

Townscape/Villagescape/Landscape Interest

The building historically used as a mill for grinding corn, and residing in much of its original plan form and lcation, is a positive example of local history and positively contributes to the character and appaearance of the landscape and area.

Brookhouse Farm			
Sandy Lane	B61 0QW		BDC ID BEL42

Description / Summary

Early C19th. Slate gable roof with chimney stacks in each end gable. First floor windows have rusticated arches with a central keystone. Possible sash windows. Plain eaves cornice.

Age, Authenticity and Rarity

C19th farmhouse. Appears on 1st edition OS map with few alterations evident in the footprint since the C19th.

Architectural Interest

A good example of craftmanship and high quality design. Survives relatively unaltered.

Historic Interest

Townscape/Villagescape/Landscape Interest

The Hayloft, Hill Farm Barns				
Hockley Brook Lane	DY9 0AA	Belbroughton	BDC ID	BEL43

Description / Summary

South-eastern range of farm buildings now converted to residential. U-plan farmstead with threshing barn, granary, hayloft and cart shed, all of which have been converted to residential use. Cart shed has been significantly altered and illegible.

Age, Authenticity and Rarity

Architectural Interest

Historic Interest

A partially complete farmstead with converted buildings retaining much of their form. Set within the historic context of the agricultural history of the area.

Townscape/Villagescape/Landscape Interest

Beoley

Rosecroft				
Alcester Road	B48 7HX	Beoley	BDC ID	BEO001

Description / Summary

A small C19th century cottage constructed in red brick raised from a T-planform with late twentieth century extension to the side. Brick beneath a shallow pitched roof. Original vernacular casement windows to front elevation. HER suggest it was a nail-makers cottage, however it lacks the distinctive single-storey workshop projection. It could have been two back to backs.

Age, Authenticity and Rarity

A small mid- to late C19th workers cottage or possibly pair of cottages, clearly on the 1st Edition 1884 OS map, where it appears to be two, back-to-back cottages. It is unaltered save for being extended to the side, although would now appear to be one dwelling.

Architectural Interest

Surviving example of a modest mid to late C19th brick dwelling.

Historic Interest

The HER refers to it being a nailmakers cottage, although the form is slightly different to that seen in other parts of the district. It’s also an unusual location. However it is a rare survival of an unaltered workers cottage or pair of cottages.

Townscape/Villagescape/Landscape Interest

Stands out being located close to the road in an area which is architecturally undistinguished.

Arrowdale & Holt End Farm			
Beoley Lane	B98 9AN	Beoley	BDC ID BEO003

Description / Summary

C16th century origins, timber-framed with square framing and brick nogging. Former farmhouse to Barkers Farm, now converted to two dwellings: Arrowdale and Holt End Farm. The building housed Beoley's first Post Office until 1919. Two parallel ranges with gable ends to road. Western range slightly set back. Weather square timber-framing with brick infill and plain tiled roof. Two storeys with 3 brick chimneys. Part of partially extant farmstead, positioned side on to the yard. The building was formerly Grade III listed but delisted in 1986. (Previously known as Barkers Cottages). Buildings shown on 1843 Tithe Map.

Age, Authenticity and Rarity

C16th origins, with 20th century additions and alterations. Timber-framing with largely modern brick infill panels.

Architectural Interest

Good surviving example of a rural vernacular timber-framed building, illustrating the craftsmanship of the time.

Historic Interest

Illustrates the agricultural history of Holt End and was the home of Beoley's first post office until 1919.

Townscape/Villagescape/Landscape Interest

Central location within the village of Holt End and has a strong street presence. Group value with neighbouring former agricultural buildings which formed Barkers Farm.

Beoley Village Hall			
Beoley Lane	B98 9AN	Beoley	BDC ID BEO004

Description / Summary

1905 by WF Edwards. Built as a Reading Room funded by Andrew Carnegie. Red brick with slate pitched roof, extended in 1933, 1959 and 1988. Requisitioned in November 1939 as a first aid point and as the Platoon Headquarters for the Beoley (No.2) Platoon of A-Company, 9th Worcestershire's (Redditch) BU Home Guard. Roll of honour wall with 66 names from WWI. Now used as Beoley village hall.

Age, Authenticity and Rarity

A rare example of an Andrew Carnegie library within the district. The building however, has been extended and altered a number of times.

Architectural Interest

A modest, simple structure designed in a sub Arts & Crafts style.

Historic Interest

Historic interest as a Carnegie-funded library and use of the building during WWI as a first aid point and Platoon Headquarters. Roll of honour attached to building.

Townscape/Villagescape/Landscape Interest

Building of local social importance due to its use as a public building. It is a landmark at the western entry point to the village.

Beoley First School & Woodland House Day				
Beoley Lane	B98 9AN	Beoley	BDC ID	BEO005

Description / Summary

1876 by architect John Cotton. Brick in English bond with raised and flush blue brick string courses, beneath a plain clay tile roof. School now extended to the east. Former Headmasters House, now a day nursery, adjoined to the west. Original gate piers remain. Modern windows and modern extension to east. Building shown on 1883 OS map. Located within the Beoley Conservation Area.

Age, Authenticity and Rarity

The school was constructed in 1876 at a time when many Board schools were constructed following the 1870 Education Act. Despite the unsympathetic modern windows and later extensions the original building is still clearly legible.

Architectural Interest

John Cotton was a locally important architect of the C19th based in Bromsgrove. This is a good example of one of his schools with many decorative features.

Historic Interest

A post-1870 Education Act Board School, illustrating an important era in educational and social history.

Townscape/Villagescape/Landscape Interest

Building of local social importance due to its use as a public building. Landmark building at entrance to Beoley Conservation Area.

Madeley Green				
Billesley Lane	B48 7HE	Beoley	BDC ID	BEO006

Description / Summary

Part timber-framed C17th 1 storey cottage with attic, now infilled with brick, with later two-storey and single storey additions. Original timber-frame element has 2 plain brick chimneys to gable ends. Red clay tile roof with 2 pitched dormer to earlier wing. Carpenter's mark of 1761 engraved into internal beam. Extant internal features include timber-framing and inglenook fireplace. 1855 Billings Directory of Worcestershire list resident as a farmer. Building shown on 1834 Tithe Map. Formerly Grade III listed.

Age, Authenticity and Rarity

Late C17th and visible on the 1834 Tithe Map. Rare survival of unlisted building of this age. Building has been extended over time.

Architectural Interest

Good surviving example of timber-framed building, with internal features, albeit with later additions, illustrating the craftsmanship of the time.

Historic Interest

A good example of what was originally a modest agricultural dwelling dating from the C17th. It provides evidence of the living conditions from this period as well as the nature of many modest farmsteads from the C17th and well into the C19th.

Townscape/Villagescape/Landscape Interest

The property is set back from the road behind extensive hedges and so has little street presence. It does however illustrate the isolated nature of many of these small, early farmsteads.

Billesley Farm & Billesley Farm Cottage				
Billesley Lane	B48 7HF	Beoley	BDC ID	BEO007

Description / Summary

Farmhouse including adjacent detached cottage, originally an outbuilding, and adjacent unconverted L-shaped barn. The farmhouse has a T-shaped plan and is single storey with attic to the east/west range and two-storey to the north/south range. Timber-framed with infilled brick panels to west elevation. East/west range and gable end to north/south range constructed of brick, now rendered. Clay tile roof with gabled dormer windows. Brick, now rendered construction with clay tile roof. Later lean-to single storey element to principal gable. Upvc windows. Main chimney stack has three star-shaped shafts; later rectangular chimney to rear. Brick built detached barn with clay tiles located to west of farmhouse. Shown on 1843 Tithe map.

Age, Authenticity and Rarity

Late C17th and visible on the 1834 Tithe Map. Rare survival of unlisted building of this age. Building has been extended over time.

Architectural Interest

Good surviving example of timber-framed building, with internal features, albeit with later additions, illustrating the craftsmanship of the time.

Historic Interest

The small farmstead has some architectural interest, but, in their form, configuration, interrelationship and character, the buildings also offer important evidential value, which allows an understanding not only of the form and function of historic farm complexes, but also evidential value for the character and history of the parish, and its isolated hamlets.

Townscape/Villagescape/Landscape Interest

Located close to the road and therefore a prominent feature in the rural streetscene. Illustrates the isolated nature of the areas early farmsteads.

Longfield				
Bleachfield Lane	B98 9AX	Beoley	BDC ID	BEO008

Description / Summary

C17th detached cottage. Timber-frame with painted brick infill panels. Painted brick C20th cross-gabled extension to south and C20th single storey extension with catslide roof to east (rear) with dentiled eaves with clay tile roof. Modern lean-to porch to front elevation. Modern casement windows. Shown on 1834 Tithe Map. Located within the Beoley Conservation Area.

Age, Authenticity and Rarity

Building dates to C17th and visible on the 1834 Tithe Map. Building has been extended over time, but the original structure is clearly legible.

Architectural Interest

Good surviving example of timber-framed building illustrating the craftsmanship of the time.

Historic Interest

Illustrates the early development of the settlement at Holt End, and the history of Beoley.

Townscape/Villagescape/Landscape Interest

Forms a prominent feature at the eastern end of the Conservation Area.

Carpenters Hill House			
Carpenters Hill	B98 9BS	Beoley	BDC ID BEO009

Description / Summary

Timber-framed with painted brick infill, painted brick additions and plain tiled roofs of varied form in U-plan: original part to north extended in C20th to south around small west courtyard. Two storeys. Hardwood casements with leaded lights. Vernacular Revival style. Main entrance to east adjacent to tall stair window. Former gamekeeper's cottage to Beoley Hall. Later additions in 1938 and 1965 of high standard of design and build and are a sympathetic and successful reinterpretation of traditional form and detail in the Arts and Crafts manner.

Age, Authenticity and Rarity

A cottage clearly shown on the 1884 1st Edition OS map, but also on the 1840 Tithe Map. Timber-framed. Although it has been extended a significant proportion of the historic building is still apparent.

Architectural Interest

A distinctive example of timber-framed construction, illustrating the craftsmanship of the time, but with considered later additions in an Arts & Crafts style.

Historic Interest

Illustrates the isolated nature of the farmsteads in the parish in the C17th to C19th.

Townscape/Villagescape/Landscape Interest

Hawthorn Cottage			
Chapel Lane	B98 9FH	Beoley	BDC ID BEO010

Description / Summary

Vernacular C17th timber-framed cottage now with painted white brick infill. Plain clay tile roof. Single storey with attic with dormers to front elevation. Modern white rendered porch to front elevation. Building shown on 1834 Tithe map.

Age, Authenticity and Rarity

A modest timber-framed cottage. Although there are extensions, a significant proportion of the historic building is still legible. Clearly shown on the 1840 Tithe map.

Architectural Interest

A good example of a modest timber-framed cottage, illustrating the craftsmanship of the time.

Historic Interest

Illustrates the early development of this settlement.

Townscape/Villagescape/Landscape Interest

Being located close to the road, the property forms a prominent feature in the streetscene.

Uplow Cottage & The Cottage			
Holt Hill	B98 9AT	Beoley	BDC ID BEO011

Description / Summary

Pair of semi-detached cottages. Original core, timber-framed with brickwork infill panels, later additions rendered brickwork. Formerly known as Mellow Cottage. Shown on 1834 Tithe Map. Located within Beoley Conservation Area.

Age, Authenticity and Rarity

A pair of late C17th cottages shown on the 1834 Tithe Map, partly timber-framed.

Architectural Interest

Example of modest partly timber-framed cottages.

Historic Interest

They illustrate the early development of the settlement.

Townscape/Villagescape/Landscape Interest

Located set-back from the road but clearly visible, making a positive contribution to the streetscene and the Conservation Area.

The Village Inn			
Holt Hill	B98 9AT	Beoley	BDC ID BEO012

Description / Summary

Detached brick, now rendered, public house with three ranges of various heights. Slate roof with exposed brick chimneys. Bay windows and timber sashes to the front elevation and mid-C20th timber casements to other elevations. Stone cills and decorative lintels. Modern C20th porch to front elevation with flat roof extension to rear. Front chimney stack to south-west range lost. Shown on 1834 Tithe Map.

Age, Authenticity and Rarity

Early C19th property, has been in use as a public house at least since the 1st Edition of the OS in 1883.

Architectural Interest

Historic Interest

The building is an important element in the social history of the settlement.

Townscape/Villagescape/Landscape Interest

The building is located on a prominent corner on the main road through the settlement of Holt End, and is a focal point in the village.

Old Forge Cottage				
Icknield street	B98 9AP	Beoley	BDC ID	BEO013

Description / Summary

Former forge and cottage, with later additions and alterations. Now divided into two dwellings. Partly timber-framed with rendered infill and with rendered and brick additions. Plain tiled roof with ridge and end stacks. 4 bays. Single storey and attic. Collar and tie-beam truss exposed at north end. Replacement leaded casements. Significant proportion of the historic building, including timber-framing is still apparent.

Age, Authenticity and Rarity

A pair of cottages clearly shown on the 1840 Tithe map and the 1884 1st Edition OS Map, although likely to date back to the C17th. A good example of timber-framed cottages with a significant amount of surviving fabric.

Architectural Interest

A vernacular, timber-framed pair of cottages, dating back, in part, to the C17th.

Historic Interest

The building is recorded as the smithy on the 1884 OS map and it is located immediately to the north of the walled garden at Beoley Hall. It is possible that this building may have been a service building to the Hall.

Townscape/Villagescape/Landscape Interest

Walled Garden at Brook Farm (Former Walled Garden to Beoley Hall)				
Icknield street	B98 9AL	Beoley	BDC ID	BEO014

Description / Summary

Walled garden, former kitchen garden to Beoley Hall. Orange brick in garden wall bond with chamfered plinth, buttressing and blue brick ridged coping. Gateway in south elevation has pointed archway and ornate wrought iron gate. Gateway in south west elevation timber panelled double doors. Now forms part of Brook Farm. Visible on 1840 Tithe Map

Age, Authenticity and Rarity

An early C19th element of the formal gardens at Beoley Hall. A rare survival of a C19th walled garden structure.

Architectural Interest

A substantial structure, constructed of local materials.

Historic Interest

A rare survival in the District of a walled garden associated with Beoley Hall, who owned a significant amount of the surrounding area during the C19th.

Townscape/Villagescape/Landscape Interest

Parts of the walled garden are visible from Icknield Street, and forms a prominent feature on this road.

Lilley Green Hall			
Lilley Green Road	B48 7HA	Beoley	BDC ID BEO015

Description / Summary

Large early C19th detached, two storey house. Stuccoed and castellated west (front) elevation frontage with garlands below the cornice. Symmetrical of 5 bays to the west front with wider central bay with battlemented porch with Ionic columns in antis. Modern late C20th extension to north elevation with garage at ground floor. Upvc windows.

Age, Authenticity and Rarity

House dated by the recent Pevsner to around 1837. Although it has been altered and extended, it still retains some of its original character, especially the front elevation despite the Upvc windows.

Architectural Interest

A distinctive and imposing building which takes full advantage of its elevated setting. Its main façade retains much of its original form and character despite recent alterations.

Historic Interest

Townscape/Villagescape/Landscape Interest

Old Farm (including barn to north of farmhouse)			
Old Lane	B48 7EY	Beoley	BDC ID BEO016

Description / Summary

An extant C19th farmstead, although the farmhouse is clearly older having a substantial timber-framed element. The north east wing of the courtyard appears to have been rebuilt but the remaining buildings around the farmyard appear to be original. Substantial timber-framed building, much altered but frame appears largely intact from external inspection. Farm buildings still in agricultural use and little altered. Threshing barn to north of farmhouse.

Age, Authenticity and Rarity

The farmhouse is likely to be late C17th comprising a largely timber-framed structure with brick infill panels. Despite later extensions the original form is still legible. It sits within an extant C19th farmstead.

Architectural Interest

A good example of a modest timber-framed cottage, illustrating the craftsmanship of the time, with some later additions.

Historic Interest

A good example of a smaller C19th farmstead, but with a much older farmhouse, which illustrates agricultural practices of the time. The buildings provide information, which allows an understanding not only of the form and function of historic farm complexes, and their place in our rural social history, but also evidential value for the character and history of the parish, and its isolated hamlets.

Townscape/Villagescape/Landscape Interest

The farmstead sits in an isolated location reached via a narrow lane from Lilley Green Road. There are public footpaths leading off to the south-west and north-east, which were probably more substantial tracks in earlier centuries. This is a surviving rare example of an isolated farmstead still in use, which was typical of this part of the District.

Hob Hill Farm (including The Coach House and The Barn)				
Seafield Lane	B48 7HL	Beoley	BDC ID	BEO017

Description / Summary

Substantial Victorian vernacular farmhouse with projecting gables to east, brick beneath pitched clay tile roofs. Detailing includes courses of blue brick and polychromatic blue headers. Range of farm buildings to north, in brick beneath pitched clay tile roofs. Extant Victorian farmstead with converted buildings in a regular courtyard of L-planform, although the original layout is still legible. Visible on 1840 Tithe Map.

Age, Authenticity and Rarity

A C19th farmstead, with a regular L plan courtyard with a farmhouse attached to the south. The farm buildings are relatively intact. However the farm buildings have been converted to residential units and farmhouse significantly modernised.

Architectural Interest

This is a good example of an C19th farmstead typical of this part of the District. It is largely intact although the farm buildings have been converted to residential use.

Historic Interest

The buildings provide information, which allows an understanding not only of the form and function of historic farm complexes, and their place in our rural social history, but also evidential value for the character and history of the parish, and its isolated hamlets.

Townscape/Villagescape/Landscape Interest

It forms an attractive group with the neighbouring farmstead, Newlands Farm, located across the lane. This settlement pattern of isolated farmsteads and hamlets of two or three dwellings and farm buildings is typical of the character of the area.

Newlands			
Seafield Lane	B48 7HJ	Beoley	BDC ID BEO018

Description / Summary

Victorian Arts & Crafts inspired detached farmhouse of 1872, remodelled in 1895, 1920 and the early 2020s. Brick-built with scalloped tile hanging to first floor. Pitched plain clay tile roof with hipped gable to right-hand side and projecting first floor supported on decorative timber corbels. Walled garden to rear with cast iron gate piers. Extensive range of C19th brick farm buildings, now converted to residential. Part of farmstead visible on 1840 Tithe Map. Farmhouse visible on 1883 OS Map.

Age, Authenticity and Rarity

C19th farmstead clearly shown on the 1st Edition 1884 OS Map and partly on the 1840 Tithe Map. There has been some loss of buildings but the farmstead is relatively intact. The farm buildings have been converted to residential. The farmhouse comprises a large C19th house, of an unusual design for the district.

Architectural Interest

The late C19th farmhouse is a fine piece of Arts & Crafts influenced architecture, with prominent chimneys, tile hanging and some original joinery. Although the farm buildings have been converted to residential, the farmstead is still largely intact, their original form is still clearly legible.

Historic Interest

The farmhouse which is a late C19th building, is quite grand indicating that this was probably a wealthy farm at this time. The farmstead as a whole is a good example of the isolated farmsteads which were found throughout the parish, which has survived relatively intact, and illustrate C19th agricultural working practices.

Townscape/Villagescape/Landscape Interest

It forms an attractive group with the neighbouring farmstead, Hob Hill, located across the lane. This settlement pattern of isolated farmsteads and hamlets of two or three dwellings and farm buildings is typical of the character of the area.

Wren’s Nest			
Wapping Lane	B98 9ER	Beoley	BDC ID BEO020

Description / Summary

House probably C17th altered and extended late C20th . Timber-framed with brick infill, slate roof. Two-bay range with large C20th addition at west end. Modern timber casements. The 1st Edition 1889 OS suggests it was part of a farmstead, with the neighbouring Grade II listed Mount Pleasant being the farmhouse.

Age, Authenticity and Rarity

C17th cottage clearly shown on the 1st Edition of the OS, as well as the 1840 Tithe Map. It is likely to have been a barn to the adjacent Mount Pleasant, the Grade II C17th timber-framed house to the east.

Architectural Interest

Good surviving example of timber-framed building. Some substantial timbers in wall-frame survive although roof structure has probably been replaced. An interesting survival that has some group value with the adjacent listed building.

Historic Interest

Taken with Mount Pleasant the farmstead as a whole is a good example of the isolated farmsteads which were found throughout the parish, which has survived relatively intact, and illustrate C17th to C19th working practices agricultural working practices.

Townscape/Villagescape/Landscape Interest

Occupies a prominent position in the streetscene due to its road side location, and adjacent to the Grade II listed Mount Pleasant farmhouse.

Greenfield				
Church Road	B61 9BY	Dodford with Grafton	BDC ID	DOD001

Description / Summary

1848-49 Chartist cottage. Original section three bays on the front elevation. C20th alterations including large side extension of two more bays, replacmenet of windows, and addition of rendering. Trefoil ventilator still present. Building has slated roof of same pitch to original.

Age, Authenticity and Rarity

1848-49, one of the more authentic cottages. Despite large side and rear extensions, the original form of the Chartist cottage is still evident. Retention of two out of three original chimneys.

Architectural Interest

The Chartist buildings were to the design of Fergus O'Connors specification, and built by Henry Cullingham, a "general builder, carpenter, and architect" who supervised the construction at each of the sites.

Historic Interest

The Chartist cottages represent a significant period of social and political history. The movement enabled people, driven off land by enclosure, to settle into new agricultural communities. Each family was given a plot of land to feed themselves, pay rent, and a make a small profit from selling crops. They also qualified for a vote in county through land ownership.

Townscape/Villagescape/Landscape Interest

Dodford was laid in a grid formed by narrow tracks and four acre plots. The remaining Chartist cottages occupy these plots which are still clearly divided. Their position within each four acre plot contributes to the significance of the Conservation Area. Cumulatively the buildings presence in the landscape and streetscape creates a distinctive character and layout to Dodford Conservation Area.

Dodford First School			
Fockbury Road	B61 9AW	Dodford with Grafton	BDC ID DOD002

Description / Summary

Dodford First School dates from 1877, designed by F.J Yates. The building is 1 storey with atic with red brick English Bond and interspersed stone banding. The roof is pitched with red clay tiles with decorative ridge tiles and painted bargeboards. The windows are now modern but within original openings with stone lintels and glazed brick sills. The building was built by Brazier and Weaver using the bricks from their brickworks on site between the Old School House and Dodford Lodge.

Age, Authenticity and Rarity

The First School opened in 1877 and has since served the community of Dodford. The form of the building, although extended over time, remains true to the original playful architectural language. Notwithstanding the windows, much of the original fabric and design is evident.

Architectural Interest

The school is in the Minimalist Gothic style by F.J. Yates with banding and saddleback bell turret.

Historic Interest

The First School opened in 1877 and has since served the community of Dodford. The building is associated with the notable architect F.J Yates and was built following the 1870 Education Act.

Townscape/Villagescape/Landscape Interest

The First School is a locally important building type and has a strong presence in the street-scene. It contributes strongly to the distinctive character of the area.

The Old Post Office			
Priory Road	B61 9DA	Dodford with Grafton	BDC ID DOD003

Description / Summary

1848-49 Chartist cottage. The original Chartist cottage on the left hand side when facing the front elevation. C20th additions and alterations including rendered façade, and large side and rear extesions. The windows have been replaced and are in non-original openings.

Age, Authenticity and Rarity

1848-49: the authenticy of fabric is not high, but the form of the original Chartist cottage can still be seen. The front gable projects accurately at the same height of the roof.

Architectural Interest

The Chartist buildings were to the design of Fergus O'Connors specification, and built by Henry Cullingham, a "general builder, carpenter, and architect" who supervised the construction at each of the sites.

Historic Interest

The Chartist cottages represent a significant period of social and political history. The movement enabled people, driven off land by enclosure, to settle into new agricultural communities. Each family was given a plot of land to feed themselves, pay rent, and a make a small profit from selling crops. They also qualified for a vote in county through land ownership.

Townscape/Villagescape/Landscape Interest

Dodford was laid in a grid formed by narrow tracks and four acre plots. The remaining Chartist cottages occupy these plots which are still clearly divided. Their position within each four acre plot contributes to the significance of the Conservation Area. Cumulatively the buildings presence in the landscape and streetscape creates a distinctive character and layout to Dodford Conservation Area.

Sumach			
Priory Road	B61 9DA	Dodford with Grafton	BDC ID DOD004

Description / Summary

1848-49 Chartist cottage. Original section three bays on the front elevation. C20th additions to the rear and roof. Alterations to the fabric of the building including white painted brick and replacement windows. No trefoil ventilator present.

Age, Authenticity and Rarity

1848-49: the original planform of the building can still be read from the front elevation despite a large rear extension and unsympathetic alterations such as raising of the roof, painting the brickwork, replacing the windows, and removing the trefoil ventilator.

Architectural Interest

The Chartist buildings were to the design of Fergus O'Connors specification, and built by Henry Cullingham, a "general builder, carpenter, and architect" who supervised the construction at each of the sites.

Historic Interest

The Chartist cottages represent a significant period of social and political history. The movement enabled people, driven off land by enclosure, to settle into new agricultural communities. Each family was given a plot of land to feed themselves, pay rent, and a make a small profit from selling crops. They also qualified for a vote in county through land ownership.

Townscape/Villagescape/Landscape Interest

Dodford was laid in a grid formed by narrow tracks and four acre plots. The remaining Chartist cottages occupy these plots which are still clearly divided. Their position within each four acre plot contributes to the significance of the Conservation Area. Cumulatively the buildings presence in the landscape and streetscape creates a distinctive character and layout to Dodford Conservation Area.

School House Private Day Nursery			
Priory Road	B61 9DF	Dodford with Grafton	BDC ID DOD005

Description / Summary

The School House was built in 1882 by John Cotton. The ground floor windows have segmental arch openings and the first floor windows have arched brickwork openings. The building is red brickwork in an English bond with cream brick diapering around the stone motif. Tiled gable roof with black bargeboards and central chimeny. Prominent string course between floors. Flat pilasters and hood-mould on gable. C20th single storey extension to the rear.

Age, Authenticity and Rarity

Built in 1882, the form of the building is pronounced despite later additions. The original planform can still be read externally. C20th windows but in original openings. Interesting features such as the cream brickwork diaperwork and brick banding still remain.

Architectural Interest

The School House is in the Minimalist Gothic style by John Cotton.

Historic Interest

The building is associated with the notable architect John Cotton who also designed Dodford Lodge.

Townscape/Villagescape/Landscape Interest

The building is prominently placed and is currently a School House serving the community.

Dodford Lodge			
Priory Road	B61 9DF	Dodford with Grafton	BDC ID DOD006

Description / Summary

Dodford Lodge is a gabled brick farmhouse built in 1881 by John Cotton. The building is in a domestic Gothic style with red brick and decorative blue brick diapering on all elevations. The building has four tall chimneys to the centre of the roof.

Age, Authenticity and Rarity

Built in 1881, the form of the main dwelling has not been altered or extended over time which is particularly rare. Original windows in original openings.

Architectural Interest

The Lodge is in the Minimal Gothic style by John Cotton. The building still remains complete in its architectural design as it has been minimally altered. The windows illustrate this as they have retained either segmental or two-centred arch openings. Characteristic details such as diaper brickwork, decorative hood moulds and brick keystones show the quality and detail of the architecture.

Historic Interest

The building is associated with the notable architect John Cotton who also designed School House.

Townscape/Villagescape/Landscape Interest

The building is a former farmhouse which positively contributes to the distinctive character and building stock of Dodford.

Little Dodford Farm			
Priory Road	B61 9DF	Dodford with Grafton	BDC ID DOD007

Description / Summary

Little Dodford Farm is an L-shaped farmhouse, showing Hall and cross-wing. As a result, the building is organic in its appearance with several gable ends facing perpendicularly to one another. The exterior of the building is finished in render with exposed brickwork chimneys. The roofs are deep with red clay tiled roofs.

Age, Authenticity and Rarity

Dating from the C17th the building is rare in its age. Almost entirely rebuilt in brick, but containing two timber-frame gable heads. Originally jettied but now underbuilt probably in the C19th. Considered to retain a large amount of original internal timber. Modern windows.

Architectural Interest

A good example of a C17th farmhouse developed overtime. Historic construction methods can still be read. Showing clearly later additions and alterations such as dormers and rendered exterior.

Historic Interest

The building, particularly as it is multi-phased, is important in showing how it was used overtime and how it contributed to the landscape as a farm and now residential property. The patchwork of fabric it contains shows a development of changing traditions and needs overtime.

Townscape/Villagescape/Landscape Interest

Located in a prominent position at the southerly entry point to the settlement.

The Tower House			
Priory Road	B61 9DF	Dodford with Grafton	BDC ID DOD008

Description / Summary

The Tower House is constructed in a variety of materials and finishes, spanning from brick to pebbledash render and clay pitched roofs with a parapeted tower. The tower is a significant feature with Arts & Crafts style openings and windows inserted. The building greatly retains what appear to be some original windows in original openings. The pattern of fenestration on the building emphasises the Arts & Crafts style of the property.

Age, Authenticity and Rarity

Built between 1907 and 1908, the building shows creative and interesting architetcure with many layers and is authentic to its original appearance. Dating from the early 1900s it is contemporary with the adjacent Church of the Holy Trinity and St. Mary, and designed by the same architect.

Architectural Interest

The dwelling is in the Arts & Crafts style by Arthur Bartlett. It is distinctive in its organic and rustic appearance with attention to artistic and architectural detail.

Historic Interest

The building is associated with the notable architect Arthur Bartlett who also designed the Grade II* Holy Trinity Church. This intrinsic link with the church is important and adds value to the building.

Townscape/Villagescape/Landscape Interest

West Brook and Building to the rear of West Brook			
Victoria Road	B61 9BZ	Dodford with Grafton	BDC ID DOD009

Description / Summary

1848-49 Chartist Cottage with significant C20th alterations. Three bays with sloped C20th front projecting element. To the rear, late C19th stables associated with the workings of the cottage. Replaced windows in non-original openings.

Age, Authenticity and Rarity

1848-49 Chartist cottage with a lower authenticity of fabric. Form of the original cottage however is still significant. This Chartist cottage in particular shows a rare example of a late C19th stable associated with the growth of strawberries in the settlement and horses which carted them to Birmingham markets.

Architectural Interest

The Chartist buildings were to the design of Fergus O'Connors specification, and built by Henry Cullingham, a "general builder, carpenter, and architect" who supervised the construction at each of the sites.

Historic Interest

The Chartist cottages represent a significant period of social and political history. The movement enabled people, driven off land by enclosure, to settle into new agricultural communities. Each family was given a plot of land to feed themselves, pay rent, and a make a small profit from selling crops. They also qualified for a vote in county through land ownership.

Townscape/Villagescape/Landscape Interest

Dodford was laid in a grid formed by narrow tracks and four acre plots. The remaining Chartist cottages occupy these plots which are still clearly divided. Their position within each four acre plot contributes to the significance of the Conservation Area. Cumulatively the buildings presence in the landscape and streetscape creates a distinctive character and layout to Dodford Conservation Area.

Chapelgate			
Warbage Lane	B61 9BE	Dodford with Grafton	BDC ID DOD010

Description / Summary

Chapelgate was a Baptist chapel founded in 1865. The chapel is a single storey, brick building of 5 bays with a slate roof. The brick is a local red/orange clay slop-moulded type. The construction of the building was undertaken in two phases. The first in 1865 is the three westerly bays with two number pointed arch windows on each side. The building was extended in the early C20th with two bays to the east and a chimney on the east gable wall. Now converted to residential use.

Age, Authenticity and Rarity

Built in 1865, the phases of the building are clear. The original and simple plan form is evident. The original brickwork and slates remain well intact. This is a rare example of a Baptist chapel within the Conservation Area.

Architectural Interest

The architetcural style is simple but attractive in detailing. Original timber pointed arch windows occupy the earlier part of the building.

Historic Interest

Fergus O'Connor had not wanted churches in the settlement. The development of the chapel took place after the vacant plots were auctioned off.

Townscape/Villagescape/Landscape Interest

The building, now dwelling, was once a Baptist chapel and therefore was erected with the purpose of serving the surrounding community of Dodford. The building is distinctive as a building of worship within the Conservation Area.

Orchard Cottage				
Whinfield Road	B61 9BG	Dodford with Grafton	BDC ID	DOD011

Description / Summary

Chartist cottage with C20th alterations and additions along with C19th barn to the rear. Windows have been replaced in non-original openings. Three bays with retained central projecting element and trefoil ventilator. Rendered plinth to base perimeter of the building.

Age, Authenticity and Rarity

1848-49, The original plan-form of the building is evident. Extensions to the rear are not seen from the front elevation, creating a clearer historic aesthetic to the cottage. Many features have been altered but many such as the ventilator and plinth remain.

Architectural Interest

The Chartist buildings were to the design of Fergus O'Connors specification, and built by Henry Cullingham, a "general builder, carpenter, and architect" who supervised the construction at each of the sites.

Historic Interest

Although not strictly a Chartist cottage, it was built shortly after the initial phase and sits on one of the original plots. It provides an insight into the later part of the history of the Chartist development at Dodford. The Chartist cottages represent a significant period of social and political history. The movement enabled people, driven off land by enclosure, to settle into new agricultural communities. Each family was given a plot of land to feed themselves, pay rent, and a make a small profit from selling crops. They also qualified for a vote in county through land ownership.

Townscape/Villagescape/Landscape Interest

Dodford was laid in a grid formed by narrow tracks and four acre plots. The remaining Chartist cottages occupy these plots which are still clearly divided. Their position within each four acre plot contributes to the significance of the Conservation Area. Cumulatively the buildings presence in the landscape and streetscape creates a distinctive character and layout to Dodford Conservation Area.

Sundays Hill			
Whinfield Road	B61 9BG	Dodford with Grafton	BDC ID DOD012

Description / Summary

The building sits over two stories, with red brick English Bond coursing. The symmetry of the building is strong with three bays and a banded chimney at each gabled end. The windows are 9/9 sash with square head stone lintels at first floor and segmental arches for ground floor windows with limestone detail and cills. Semi-circular door head with limestone detail. Fanlight with Y-tracery detail and moulded panel door. Large extension to the rear.

Age, Authenticity and Rarity

1850s. Although extended to the rear, the architectural intention, proportions, and planform, are distinguishable. Original brickwork and details around fenestration remain with windows in original openings.

Architectural Interest

The building is considered to be in the Regency style, although constructed in the 1850s, shown by the slim and elegant details and simple proportions. Another notable characteristic are the round-headed windows and doors at ground floor level.

Historic Interest

Constructed on one of the original plots which was sold at auction in the early 1850s.

Townscape/Villagescape/Landscape Interest

The Dodford Inn			
Whinfield Road	B61 9BG	Dodford with Grafton	BDC ID DOD013

Description / Summary

Built between 1851 and 1861. A red brick public house with Flemish bond brickwork with C20th extensions and a large C21st extension to the west. The fenestration is not in a particular pattern with segmental and flat arches in rubbed brick. Lower-roofed range is the former malthouse with an external staircase from yard. Both ranges have slated pitched roofs and the main range has two brick chimneys off-centre to the roof.

Age, Authenticity and Rarity

Built between 1851 and 1861, the original planform has changed somewhat over time with the subtraction and addition of built form. However, the orignal backwards "C" shaped plan is very discernible and contributes to the character of the building.

Architectural Interest

Historic Interest

The 1866 Directory suggests there was a beer retailer located here, indicating that beer was made in the home and sold from there. The first mention of the Dodford Inn was in 1867.

Townscape/Villagescape/Landscape Interest

The public house, now inn/restaurant, has been a locally important building serving the community since it was first erected in the C19th.

Highfields			
Woodland Road	B61 9BP	Dodford with Grafton	BDC ID DOD014

Description / Summary

Chartist cottage with C20th alterations and additions. Extension to the north-west side of the building is sympathetic and continues the catslide form of the original Chartist cottage. Mono-pitched roof extension to the front of the central element. The building is white rendered with slate tiled roof. Extensions to the rear, bay windows added in non-original window openings, as well as Upvc windows and doors. Despite alterations it is still a legible Chartist cottage.

Age, Authenticity and Rarity

1848-49 Chartist cottage with a lower authenticity of fabric. Despite extensions, the form of the original cottage however is still significant and clearly represents the original Chartist cottage.

Architectural Interest

The Chartist buildings were to the design of Fergus O'Connors specification, and built by Henry Cullingham, a "general builder, carpenter, and architect" who supervised the construction at each of the sites.

Historic Interest

The Chartist cottages represent a significant period of social and political history. The movement enabled people, driven off land by enclosure, to settle into new agricultural communities. Each family was given a plot of land to feed themselves, pay rent, and a make a small profit from selling crops. They also qualified for a vote in county through land ownership.

Townscape/Villagescape/Landscape Interest

Dodford was laid in a grid formed by narrow tracks and four acre plots. The remaining Chartist cottages occupy these plots which are still clearly divided. Their position within each four acre plot contributes to the significance of the Conservation Area. Cumulatively the buildings presence in the landscape and streetscape creates a distinctive character and layout to Dodford Conservation Area.

Hollybank			
Woodland Road	B61 9BN	Dodford with Grafton	BDC ID DOD015

Description / Summary

1849 with late C20th alterations and additions. Slate gable roof with ridge tiling. The walls are pebbledashed with applied timber-framing. Extensions predominantly to the west and rear. Possible original nailers forge to the rear of the property.

Age, Authenticity and Rarity

1848-49 Chartist cottage with a lower authenticity of fabric. Despite extensions, the form of the original cottage is still evident and clearly represents the original Chartist cottage.

Architectural Interest

The Chartist buildings were to the design of Fergus O'Connors specification, and built by Henry Cullingham, a "general builder, carpenter, and architect" who supervised the construction at each of the sites.

Historic Interest

The Chartist cottages represent a significant period of social and political history. The movement enabled people, driven off land by enclosure, to settle into new agricultural communities. Each family was given a plot of land to feed themselves, pay rent, and a make a small profit from selling crops. They also qualified for a vote in county through land ownership.

Townscape/Villagescape/Landscape Interest

Dodford was laid in a grid formed by narrow tracks and four acre plots. The remaining Chartist cottages occupy these plots which are still clearly divided. Their position within each four acre plot contributes to the significance of the Conservation Area. Cumulatively the buildings presence in the landscape and streetscape creates a distinctive character and layout to Dodford Conservation Area.

Trefoil Croft			
Woodland Road	B61 9BN	Dodford with Grafton	BDC ID DOD016

Description / Summary

Chartist cottage with C20th alterations and additions. Large extensions to the rear and a smaller extension to the east of the building. Building now in use as a Girl Guiding faciility. Windows and doors replaced. The building shows exposed modern brickwork to the east elevation and is rendered to the front elevation.

Age, Authenticity and Rarity

1848-49 Chartist cottage. Large extensions are to the rear and so the original form of the buidling is still evident. The side elevation shows the original roof design. Chimneys and trefoil ventilator still present.

Architectural Interest

The Chartist buildings were to the design of Fergus O'Connors specification, and built by Henry Cullingham, a "general builder, carpenter, and architect" who supervised the construction at each of the sites.

Historic Interest

The Chartist cottages represent a significant period of social and political history. The movement enabled people, driven off land by enclosure, to settle into new agricultural communities. Each family was given a plot of land to feed themselves, pay rent, and a make a small profit from selling crops. They also qualified for a vote in county through land ownership.

Townscape/Villagescape/Landscape Interest

Dodford was laid in a grid formed by narrow tracks and four acre plots. The remaining Chartist cottages occupy these plots which are still clearly divided. Their position within each four acre plot contributes to the significance of the Conservation Area. Cumulatively the buildings presence in the landscape and streetscape creates a distinctive character and layout to Dodford Conservation Area.

The Millstone			
Woodland Road	B61 9BS	Dodford with Grafton	BDC ID DOD017

Description / Summary

Chartist cottage with C20th alterations and additions. Large extensions to the rear. Clay tiled roof with rendered walls and rendered grey plinth. Conservatory extension protruding from the central element. Three bays with replaced windows and doors.

Age, Authenticity and Rarity

The deeds date this Chartist cottage to 1851. The large extensions to the rear mean the original form of the building is still evident. The building retains its three bays, and its stone plinth, now rendered in grey.

Architectural Interest

The Chartist buildings were to the design of Fergus O'Connors specification, and built by Henry Cullingham, a "general builder, carpenter, and architect" who supervised the construction at each of the sites.

Historic Interest

The Chartist cottages represent a significant period of social and political history. The movement enabled people, driven off land by enclosure, to settle into new agricultural communities. Each family was given a plot of land to feed themselves, pay rent, and a make a small profit from selling crops. They also qualified for a vote in county through land ownership.

Townscape/Villagescape/Landscape Interest

Dodford was laid in a grid formed by narrow tracks and four acre plots. The remaining Chartist cottages occupy these plots which are still clearly divided. Their position within each four acre plot contributes to the significance of the Conservation Area. Cumulatively the buildings presence in the landscape and streetscape creates a distinctive character and layout to Dodford Conservation Area.

The Homestead			
Woodland Road	B61 9BN	Dodford with Grafton	BDC ID DOD018

Description / Summary

Chartist cottage with C20th alterations and additions. Original cottage has three bays, extension to the east creates a fourth two-storey bay. Building is rendered white with modern windows and bay windows in openings. Catslide roof visible to the side elevation. Roof is slate, black painted plinth to the perimeter of the building.

Age, Authenticity and Rarity

1848-49 Chartist cottage. The two storey extension to the east does not prevent the original Chartist cottage form from being read. The building retains the projecting front gable, plinth, and catslide roof form.

Architectural Interest

The Chartist buildings were to the design of Fergus O'Connors specification, and built by Henry Cullingham, a "general builder, carpenter, and architect" who supervised the construction at each of the sites.

Historic Interest

The Chartist cottages represent a significant period of social and political history. The movement enabled people, driven off land by enclosure, to settle into new agricultural communities. Each family was given a plot of land to feed themselves, pay rent, and a make a small profit from selling crops. They also qualified for a vote in county through land ownership.

Townscape/Villagescape/Landscape Interest

Dodford was laid in a grid formed by narrow tracks and four acre plots. The remaining Chartist cottages occupy these plots which are still clearly divided. Their position within each four acre plot contributes to the significance of the Conservation Area. Cumulatively the buildings presence in the landscape and streetscape creates a distinctive character and layout to Dodford Conservation Area.

The Latch			
Brimstone Lane	B61 9AX	Dodford with Grafton	BDC ID DOD019

Description / Summary

Late C17th/ early C18th vernacular two story and three bay cottage of sandstone with later early C19th rear extension of rusticated stone with perpendicular gable to make 'T' shaped planform. Windows at ground floor to the principal elevation are non-original with now casement and Victorian rounded bay. Windows at first floor are 4/4 timber sashes. Non-original door and porch. Gabled slate roof with white timber bargeboard and later grey engineered brick chimney to southern and northern gable. There is evidence of a ruttway in the garden to the quarry.

Age, Authenticity and Rarity

Late C17th/ early C18th, extended to the rear in the 1960s and most recently to the side in C21st. The development of the building can be clearly read, and the original symmetrical form and fabric of the building is evident.

Architectural Interest

Good example of a vernacular stone built cottage in the late C17th/ early C18th.

Historic Interest

The Latch is part of Worms Ash, a good example of an early hamlet, typical of the rural settlement pattern within the parish.

Townscape/Villagescape/Landscape Interest

Fockbury House (Inc. brick boundary wall to the north) and Fockbury Farm: The buildings include "Acorn House", "Oak Lodge", "1-1a dodford ocurt", "2-4 Dodford Court", and "5 Dodford Court"				
Fockbury Road	B61 9AP	Dodford with Grafton	BDC ID	DOD020

Description / Summary

Late C19th two storey red brick house with slate gable roof. Large segmental headed window openings Chimney stacks within the gable walls projecting through roof to front and rear elevations. Brick in English bond with some stone detail. Brick pilasters accentuate windows and brick piers rising from ground level to dormers in central bay. Large casements with segmental heads and some leaded glass. Brick string and banding at first-floor level, verandah to front elevation. The farmstead consists of buildings in mainly red brick and some sandstone. The roofs are pitched with clay tiles and are of varying heights. Large modern farm buildings are to the side of the site and these should not be read as part of this list.

Age, Authenticity and Rarity

Built in 1887, the house and farm buildings retain a large amount of their original fabric and form. The form of the house remains intact and clearly illustrates the historic use of the building and wealth of the farmstead. The building has original window openings with later window additions. Farm buildings have had sympathetic conversions to residential use. The size and arrangement of the farmstead is rare and distinctive.

Architectural Interest

Farmhouse built in 1887 by John Cotton for Sir John F Rotten. Extensions and dormers also by John Cotton. The farm buildings are a good example of vernacular architecture as part of a "Regular" courtyard plan with multiple yards. The buidlings, although converted and altered somewhat over time still show clearly the development of farmyard buildings with the inclusion of brick as styles developed in the C18.

Historic Interest

Home of Richard Tapp, Bromsgrove Guild Craftsman, 1896-1914, also one of Dodford school managers. The farmhouse is detached and set away from the yard.The size and arrangement of the farmstead indicates wealth and perhaps historic usage of arable farming.

Townscape/Villagescape/Landscape Interest

A large and distinctive farmstead in the landscape indicating its past use as a wealthy farm and farmstead. Due to its prominent position the buildings contribute to the character of the area.

Tower			
Bromsgrove Road	B61 9JD	Dodford with Grafton	BDC ID DOD021

Description / Summary

The structure comprises a three storey tower, Gothic in appearance, constructed in brick with half-timbered detailing to the upper floors and a brick base. It is topped with a striking pyramidal sprocketed roof.

Age, Authenticity and Rarity

The building is an early C20th Tower which retains its original form and much of its original fabric. Although dating from the C20 it historically relates to the earlier Clock House which was constructed in the 1880s. The buidling type, a tower and clock house, is rare.

Architectural Interest

The tower, with its half-timbered detailing, sprocketed roof, and brickwork, illustrates distinctive craftsmanship and design. The building is purposefully designed and has Arts & Crafts detailing.

Historic Interest

The Tower comprises all that remains of a considerably larger house: The Clock House, constructed in the 1880s having replaced C17th farmhouse. The building was demolished in 1976 but leaving the clock tower in the grounds, now renovated and extended into a residential property. Home of A.E. Housm, scholar and poet in his youth from 1873-1878.

Townscape/Villagescape/Landscape Interest

The building is distinctive in the landscape and due to its height, contribtues strongly to the character of the area.

Top House			
Woodcote Lane	B61 9EF	Dodford with Grafton	BDC ID DOD022

Description / Summary

Cottage, two storeys and two bays on the south east elevation. The front section is one room deep but there is a rear projecting element forming part of the cottage since at least the first OS map that creates an interesting planform. The building is redbrick with a plain clay tile roof and a chimney flanking each side elevation of the front section of the property. The entrance to the cottage is on the north-east elevation. Windows are not original but are sympathetic replacements in original openings with segmental arches on ground floor.

Age, Authenticity and Rarity

The building dates from the early C19th and shows a significant amount of its original form and fabric. The plan form has remained almost identical (apart from a few tweaks to the rear wing) since it was first erected. The authenticity of this building is therefore high and accurately displays the historic use of the building as a cottage and its original architectural intent.

Architectural Interest

Good example of a verncaular cottage with symmetrical architectural proportions and flemish stretcher bond.

Historic Interest

Townscape/Villagescape/Landscape Interest

Park Farm and Park Farm Barns				
Kidderminster Road	B61 9AL	Dodford with Grafton	BDC ID	DOD023

Description / Summary

Farmhouse built in the early C19th. Three bays and two storeys with 6/6 sash windows and associated white painted stone lintels and cills. The roof is tiled with chimney stacks against each gable end enhancing the symmetry of the original farmhouse. Beneath the eaves is a detailed dentilled cornice. The building is of red brick laid in a Flemish bond with later extensions to the side and rear. Park Farm barns are a "Regular Z plan" formation with multiple yards. The farmhouse is attached to the barns with the eastern gable end facing the front yard. The farmstead consists of buildings in red brick with clay tiled roofs and are of varying heights. The size and arrangement of the farmstead suggests the farm was built in such a formation to minimise waste of materials and time.

Age, Authenticity and Rarity

The farmhouse and associated farm buildings date from the early C19th and contain a considerable amount of their original fabric and form. The formal Georgian proportions are clearly discernible. Addtionally, original detailing such as stone lintels, dentilled eaves, and openings have been retained and maintained well resulting in a very attractive farmhouse.

Architectural Interest

The farmhouse represents the fashion of building farmhouses in the Georgian style. It has a distinctive architectural style and shows propsperity. The farm buildings are a good example of vernacular architecture as part of a "Regular Z plan" with multiple yards.

Historic Interest

Townscape/Villagescape/Landscape Interest

Parkgate Inn				
Kidderminster Road	B61 9AJ	Dodford with Grafton	BDC ID	DOD024

Description / Summary

Parkgate Inn is an early C18 building of painted brickwork with steep pitched clay tile roofs. The plan form of the building has grown organically with later additions including early and late C20. The building varies in height with single, two, and three storey sections. Windows are of varying styles, those on the older range have curved segmental arches with keystone. Additionally, this older section has end quoins and band at attic level. Multiple exposed brick chimneys can be seen across the public house with the two on the west side being particularly prominent.

Age, Authenticity and Rarity

Dating from the early C18, the building retains a large amount of original form and fabric. The building has positively retained its useage as an Inn since at least the first edtion OS map where it appears as "Parkgate Inn" and serves the community.

Architectural Interest

The building is multiphased and its architecture is a good example of a public house dating from the C18. Details such as tile hanging and articulated gable ends contribute to the character of the building.

Historic Interest

Townscape/Villagescape/Landscape Interest

The location of Parkgate Inn just off the busy Kidderminster Road clearly illustrates its historic and present use as an Inn/ Public House.

Battlefield Farm (farmhouse and converted barns)				
Kidderminster Road	B61 9AG	Dodford with Grafton	BDC ID	DOD025

Description / Summary

Battlefield Farm consists of a farmhouse and now-converted barns. The barns are in a U-Plan formation and are positioned to the west of Battlefield Farmhouse whose gable faces onto the yard. The farmhouse is painted brick with plain tiled roof and end stacks. Two storeys and attic dentilled eaves cornice. Three-bay façade. Windows have segmental heads and chamfered brick sills. Replacement sashes. Central entrance with gabled porch on moulded timber brackets and C20th half-glazed door. The barn range is in brick with tiled pitched roofs which step down in height as the U-plan turns towards the road. The barns have altered window and door openings. However, it is likely the large residential window on the northern side of the range is in an original opening.

Age, Authenticity and Rarity

C19th, the farmstead's original U-Plan formation and relationship to the farmhouse is clearly legible. The buildings retain their original architectural form and the majority of thier original fabric. Some window and door openings have been altered on the barns.

Architectural Interest

The buildings in the farmstead are a good example of vernacular architecture as part of a regular courtyard of U-plan and farmhouse.

Historic Interest

Battlefield Farm is on or near the site of a Civil War battle. It is also within an area that was once parkland forming part of the Grafton Manor Estate.

Townscape/Villagescape/Landscape Interest

Battlefield House				
Kidderminster Road	B61 9AD	Dodford with Grafton	BDC ID	DOD026

Description / Summary

Battlefield House has a complex planform and complex roof form. Orignally thought to be "T" shaped, the building has organically grown overtime. The building is two storeys with attic, rendered with decorative timber-framing, notably on the south-west gable. The roof consists of mainly pitched clay roofs with detailed ridging and a turreted roof on the south-west side. Grand and detailed chimneys raise high above the roofs creating a very playful appearance to the building.

Age, Authenticity and Rarity

Built in 1869, the form, fabric and architecture of the building retains much of its authenticity .There appear to have been minimal alterations over time. A rare example of an Arts & Crafts-style country house.

Architectural Interest

The building is a good example of an early Arts & Crafts-style dwelling. Although not attributed to a particular architect, the details on the building are such that they display craftsmanship and a distinctive architectural style.

Historic Interest

During World War II a store of Molotov cocktails was stored at Battlefield House for use by No 7 (Dodford) Platoon Home Guard against enemy columns passing through the adjacent road cuttin.

Townscape/Villagescape/Landscape Interest

Rodenhurst Farm				
Timberhonger Lane	B61 9DP	Dodford with Grafton	BDC ID	DOD027

Description / Summary

Square plan building of red brick with clay tile hipped roof and brick quoining to the edges. The windows are 8/2 sashes on the first floor with sash horns and original glazing. A triangular dormer is on the western elevation with tall brick chimneys breaking up the roof with corbelled detail at the top.

Age, Authenticity and Rarity

Early C20th farmhouse, the original planform of the farmstead and of the main dwelling is retained clearly reflecting its orignal design intention. The windows are original and create positive character and detail on the building. The fabric is largely intact.

Architectural Interest

Architecturally the building shows distinctive design and is well-considered in detailing especially in elements such as the windows, brickwork, and exposed rafter roof design. It's square plan form is quite distinctive.

Historic Interest

Historically the house was part of an L-shaped, regular courtyard farmstead and is indicative of a smaller farmstead. The ranges were interlinked to the north and formed one yard to the north east of Rodenhurst. Although detached, the historic shape of the farmstead is evident with larger modern buildings to the north and east directly.

Townscape/Villagescape/Landscape Interest

Grafton Cottage				
Grafton Lane	B61 7HA	Dodford with Grafton	BDC ID	DOD028

Description / Summary

Grafton Cottage is a single storey dwelling with attic shown with four small dormer windows and windows in gables with segmental arches. The majority of windows are considerd to be in their original openings. Although perhaps not the original windows, they are timber and are sympathetic in terms of design. The building is red brick with clay tile pitched roof and two tall chimneys on the east and west side of the building.

Age, Authenticity and Rarity

The building dates from the early C19th and retains features which illustrate its age, including its high chimneys. The door head cup mould is probably a later addition. The planform and architecture of the building have changed minimally over time.

Architectural Interest

Historic Interest

The building is in close proximity to Grafton Manor and the Priest’s House, although discretely located on a lane off the lane to the Manor. It has group value with these listed buildings. The 1871 map of the Grafton Estate clearly shows that the cottage was part of the Estate.
The building is an example of a modest service building for the Grafton Estate, located in close proximity to the Manor House, and provides an insight into the workings of a large rural estate.

Townscape/Villagescape/Landscape Interest

Foxwalks Farm and Foxwalks farmstead: The buildings include "Foxwalks Farm", "Farm Cottage", "The Coach House", "The Stables", "The Millhouse", and "The Granary".				
Grafton Lane	B61 7HB	Dodford with Grafton	BDC ID	DOD029

Description / Summary

The Foxwalks farm cottage is a two-storey dwelling with attic space. The façade is comprised of thin red bricks in an irregular bond creating a rustic appearance. The windows are a mixture of crittal and Upvc. On the south side of the dwelling is a two-storey timber-framed bay window with wooden framed casements and lead mullions. There is a prominent chimney on the east side of the building. Historic regular full courtyard farmstead now converted to residential. Buildings remaining include the Farmhouse (The Foxwalks/ Farm Cottage) and some of the Foxwalks farm barns. To the north is the "The Coach House" and "The Stables" in a linear plan formation. To the north of this is "The Millhouse", and "The Granary", in an L-Plan formation. They are the remnants of a much larger farmstead. Large modern farm buildings adjacent to the site should not be read as part of this list.

Age, Authenticity and Rarity

Foxwalks Farm dates from the C18th and the building retains a significant and recogniseable amount of its original form and fabric. Some window openings have been altered, as shown by amended brickwork, but the historic quality of the building remains. The building is a rare example of a surviving farmhouse to a large farmstead. Although the farmstead has experienced a loss of farm buildings, it dates from the late C18th to early C19th and buildings that remain illustrate clearly the planform of the historic farmstead. The residential conversions have been sensitive and although windows have been replaced, the historic brickwork and form of the barns survive.

Architectural Interest

The architectural attention to detail on Foxwalks Farm, and the material choices with the inclusion of brick illustrates how farm building styles developed in the C18th.

Historic Interest

The use of brickwork, clay tile roofs, and the size of the farmhouse, all give an indication as to its wealth and status . The farmstead was once a full regular courtyard plan with buildings on all sides of the yard. Possibly even could be considered to be a plan of multiple yards therefore showing its size, and wealth.

Townscape/Villagescape/Landscape Interest

The building is surrounded by open fields and so sits quite prominently in the landscape. It distinctively illustrates the history and character of the area.

Proposed amendments to the existing delegations for Local Heritage List

5. Heritage			
Subject	Detail	Delegated by	Delegated to
Local Heritage List	~~1.To administer the Local Heritage list for Bromsgrove~~	Council	~~1. Head of Planning and Leisure Services~~
	~~2. To approve draft selection criteria and final lists~~		~~2. Head of Planning Regeneration and Leisure Services following consultation with the Portfolio Holder for Planning~~
	3.To publish for consultation draft sections of the Local Heritage List		3. Assistant Director for ~~Head of~~ Planning ~~Regeneration~~ and Leisure Services

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APPENDIX 1

LOCAL HERITAGE LIST STRATEGY November 2024

1 What is Local Listing?

Local lists identify heritage assets which are valued by local communities and contribute to the character and local distinctiveness of an area. There are a significant number of heritage assets within the District which are important to our local communities and make a valuable contribution to our sense of history and understanding of place.

2 Heritage Assets are defined in the National Planning Policy Framework (NPPF) as 'A building, monument, site, place, area or landscape identified as having a degree of significance meriting consideration in planning decisions, because of its heritage interest. Heritage asset includes designated heritage assets and assets identified by the local planning authority (including local listing)'. These assets can include buildings, structures, landscapes, archaeological sites or places associated with significant local, historical events, important people, trades or industries, craftsmen or locally distinctive buildings in terms of their architecture or materials, to name but a few examples.

3 Overall, they are heritage assets which are valued by local communities and contribute to the character and local distinctiveness of an area.

4 Local lists identify what is valued at a local level as opposed to national level. Nationally important heritage assets are identified as either scheduled Ancient Monuments, or on the Statutory List (occasionally they appear on both) or Register of Parks and Gardens. Other heritage assets do not satisfy the criteria for any of these national designations, and if not located in a conservation area they have no formal recognition and consequently no protection.

5 The process of preparing a local heritage list allows local people to identify the local heritage assets which are important to them as well as enabling local authorities to work in partnership with their local communities. A local list will identify the location of such assets and will define their significance.

Policy Context NPPF

6 The use of local lists is promoted by the National Planning Policy Framework (NPPF), which advises local planning authorities in Paragraph 196[1], to 'set out in their local plan a positive strategy for the conservation and enjoyment of the historic environment'. It is emphasised that 'they should recognise that heritage assets are

[1] *Plans should set out a positive strategy for the conservation and enjoyment of the historic environment, including heritage assets most at risk through neglect, decay or other threats. This strategy should take into account:*

- *the desirability of sustaining and enhancing the significance of heritage assets and putting them to viable uses consistent with their conservation;*
- *the wider social, cultural, economic and environmental benefits that conservation of the historic environment can bring;*
- *the desirability of new development making a positive contribution to local character and distinctiveness; and*
- *opportunities to draw on the contribution made by the historic environment to the character of a place.*

an irreplaceable resource and conserve them in a manner appropriate to their significance'.

7 In respect of non-designated Heritage Assets, Paragraph 209 states 'The effect of an application on the significance of a non-designated heritage asset should be taken into account in determining the application. In weighing applications that affect directly or indirectly non designated heritage assets, a balanced judgement will be required having regard to the scale of any harm or loss and the significance of the heritage asset.'

Local Plan Policies

8 In light of the NPPF the Bromsgrove District Plan (2017) acknowledges the importance of adopting a local list to formerly identify the locally important heritage assets within the district, and includes the following policies;

9 **BDP20.12** The District Council will update the current draft local heritage list and formally adopt it. It would include all heritage assets recognised as being of local importance, including those which are locally distinctive such as nailers cottages, assets associated with the scythe industry and assets associated with the use of the Worcester and Birmingham canal which runs the length of the District, to name but a few.

10 **BDP20.13** The District Council will support development that:

i. Retains Heritage assets on the local list.

ii. Involves sympathetic alterations and extensions to Heritage assets on the local list.

iii. Does not have a detrimental impact on the setting or context of Heritage assets on the
local list.

11 **BDP20.14** In considering applications that directly or indirectly affect locally listed buildings, a balanced judgement will be applied having regard to the scale of any harm or loss as a result of proposed development and the significance of the locally listed building.

Historic England Guidance

12 Local lists have been promoted in planning policy since the 1990s. Historic England's Guidance document ' 'Local Heritage Listing: Identifying and Conserving Local Heritage, Historic England Advice Note 7 (2nd edition) 2021 and its predecessors advised local authorities how they should go about preparing and maintain local lists. The guidance document has assisted in the preparation of this document.

What protection do locally Listed Buildings have?

13 Heritage assets on the local list do not attract additional consent requirements, unlike statutory listed buildings where listed building consent is required for all alterations, over and above those required for planning permission.

14 Heritage assets identified on a local list, are recognised by the local authority as having heritage significance, and therefore due to Paragraph 208 of the NPPF(outlined above), will merit consideration in planning matters. When

considering planning applications which impact on heritage assets on the local list, the LPA is required to take a balanced judgement having regard to the scale of any harm or loss and the significance of the heritage asset, in determining the application.

15 Heritage assets on the Local Heritage List will not have the same protection as those on the statutory list, although the Historic Environment policies in the District Plan support the retention of heritage assets on the list.

16 The level of protection afforded to a heritage asset on a local list will be dependent on how the local list was prepared. The more robust the process for adding a heritage asset to the local list, particularly in terms of the selection criteria, the greater the weight for protecting the asset.

17 Inclusion of a heritage asset on the list will provide clarity to owners, developers and the local planning authority allowing all parties to consider the significance of the asset at an early stage. It should be noted that if a heritage asset is not included on a local list, it does not indicate that it is of no heritage value, only that at this point in time it does not meet the criteria for inclusion on the list. The fact that it is a ‘heritage asset’ will still be a material consideration in the planning process.

Consultation

18 The process of compiling the Local Heritage List and the criteria to be used have been arrived at following public consultation.

19 The first step in the process of preparing and adopting the local list was to consult on the draft selection criteria which had been identified and the process for compiling the Local Heritage List. Following Cabinet approval a 6 week consultation was undertaken. The consultation process involved inviting comments from key stakeholders including the parish councils, neighbouring councils, Historic England, the statutory amenity societies, local history groups, other local societies and the general public. A Local Heritage List page was created on the conservation section of the Bromsgrove District Council website, with further information on the process, and details on how to submit comments. Two information evenings were also held at the Council House in Bromsgrove.

20 A number of comments were submitted in respect of the document and the criteria. The document and criteria have been amended in light of these comments

Compiling the Local Heritage List

21 Although a draft local list was drawn up in 2006, it was on the basis of nomination only and there were no defining criteria. All the properties on this list will be considered in light of the adopted criteria. As the task is a large one and the local authority wants to work with local communities to draw up the list it is proposed that the list is drawn up on a parish by parish basis where parishes exist, where no parishes exist the areas will be split up in manageable selection areas.

22 Local groups including parish councils, local history groups, local interest societies, to name but a few, as well as individuals will be invited to nominate heritage assets for consideration for inclusion on the Local List. They will need to submit evidence on a nomination form to justify the proposal having considered the selection criteria.

23 The conservation team will consider all nominations and will assess them against the criteria. The team will also survey the area to identify further properties which meet the criteria.

The Conservation Team will then assemble a draft list for the parish/area

They will then commence a consultation process as follows

Publish LHL on BDC Website

Start Consultation Process – 6 Weeks

- **Contact owners/parish council/any other consultees**
- **Use Council social media to publicise consultation and consultation event**
- **Hold consultation event**
- **Comments to be submitted preferably on a form to be found on the LHL page on the BDC website, hard copies of the form will be available at consultation events.**
- **Tabulate consultation comments**

Consider all comments against the criteria and amend the draft LHL accordingly
Prepare a summary of consultation comments & Conservation responses

24 A final report, will be prepared for Cabinet with the proposal that the Parish LHL is recommended to Council to be adopted and becomes a material consideration in the planning process.

25 There will be no appeal procedure if an owner believes his/her property should not be included on the list. The statutory listing process similarly has no appeal process although the issue of whether or not a building should be on the national list can be raised during development control procedures.

26 The process will be repeated until the whole District has been assessed. Following which there will be a similar process for subsequently adding any further heritage assets to the list periodically.

27 If for any reason a HA loses its significance, for example due to unsympathetic alterations, or additions, it could be considered for removal from the list following a similar process to the one outlined above.

What will the list look like?

28 It is envisaged that it will comprise address details, photograph, description and brief reasons for inclusion, including how it meets the criteria.

Availability/Accessibility

29 There will be a link to the list from the conservation pages of the BDC Website, with a hard copy maintained in the office.

Why do we need Selection Criteria?

30 The local list can incorporate all types of heritage assets, and selection criteria are important for defining the scope of the local heritage list, ensuring that a range of local assets including the locally distinctive are included.

31 More weight can be given to preserving the significance of assets on the local list, if the list has been objectively prepared. Criteria therefore need to be subject to public consultation and there has to be a clearly defined process for compiling the list as well as adding to it in the future.

Summary of special interest for Bromsgrove District

32 Bromsgrove District is situated in North Worcestershire, and although the town of Bromsgrove is located only 14 miles from the centre of Birmingham, the district is predominately rural, with approximately 91% designated as Green Belt.

33 Away from the built up areas around Bromsgrove the District is characterised by settlements of farmsteads and wayside dwellings with the occasional village. The Historic Environment Assessment of Bromsgrove District indicated that there was generally a moderate to high survival rate of historic character, although many of the historic assets are undesignated.

34 There are 492 listed buildings, 13 Scheduled Ancient Monuments, 839 known sites of archaeological interest, 2 registered parks and gardens and 12 conservation areas. The conservation areas vary greatly in character, however most are centred around village cores such as Belbroughton and Alvechurch, but this also means that that village buildings of interest, of which there are many, not situated in this central core are unprotected.

35 The more unusual conservation areas include a stretch of the Birmingham and Worcester Canal, however not all buildings and structures associated with the waterway are within the boundary of the conservation area, and the Chartist settlement at Dodford.

36 Most of the Dodford settlement is protected by the conservation area designation and the best surviving cottages are listed. Dodford was one of only five Chartist settlements in the country, and is considered to have been one of the key events in agricultural development in Worcestershire.

37 In addition, there are other smaller but equally notable groups of assets which are important in terms of local character and distinctiveness and these include;

- The cottages and workshops relating to the nailing industry, which boomed around Bromsgrove during the 18th and 19th centuries, and they can be found throughout the district.
- The numerous vernacular cottages and farmsteads found throughout the district, although many farmsteads have been converted to residential use.
- The houses designed by prominent Birmingham Arts and Crafts architects at the end of the 19th and at the beginning of the 20th century, particularly around Barnt Green.
- Work by the Bromsgrove Guild of Applied Arts, founded at the end of the 19th century which attracted craftsmen to the area from across Europe before it closed in the late 1960s.
- Structures and other evidence relating to the scythe industry in Belbroughton
- The significant number of parks and gardens of regional importance, identified in the Hereford and Worcester Gardens Trust, Survey of Parks and Gardens in Worcestershire[2].

Selection Criteria

38 To be considered for the local list each heritage asset should satisfy criteria 1 and one other criteria.

1 Age, Authenticity and Rarity

- Any heritage asset proposed to be considered for selection under any of these criteria the asset would need to have retained a significant and recognisable amount of its original form and fabric.

- If there are a number of examples of a particular asset the best examples in terms of their authenticity, should be selected for the Local Heritage List

2 Architectural Interest

This would include;

- Assets which can be attributed to nationally and locally important architects, designers, builders, gardeners or craftsmen, and illustrate a high quality of design or innovation. Locally important architects might include John Cotton and A V Rowe, as well as Birmingham Arts & Crafts architects such as Charles Bateman. Locally important craftsmen could include members of the Bromsgrove Guild or Birmingham Guild.

- Assets which illustrate distinctive artistic, craftsmanship, design, construction or landscaping qualities of interest. This might include a distinctive architectural style, or a good example stained glass or other decorative detailing,

- Assets which are a good example of a locally important building type (e.g Nailers Cottages).

[2] *A Survey of Historic Parks and Gardens in Worcester shire, Richard Lockett, Hereford and Worcester Gardens Trust. 2019*

3 Historic Interest
This would include;

- Assets which are associated with a locally important historic person, family or group

- Assets which illustrate a particular phase or period of local, social, religious, political or economic history (e.g nailers cottages or assets associated with the Chartist Movement at Dodford)

- Assets which are associated with a locally important historic event or movement.

4 Townscape/Villagescape/Landscape Interest
This would include;

- Assets which are locally important building types such as churches, chapels, schools and other distinctive features in the streetscape.

- Assets which are landmarks or features which make a positive contribution to the distinctive character of the area.

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Appendix 1

Modelling the Supply and Demand of Temporary Accommodation in Bromsgrove 2024/25

1. **Summary**

The purpose of the evaluation is to identify the contributing factors to the rapid increase in the use of Temporary Accommodation and associated costs in Bromsgrove and put in place a strategy for better meeting the needs of homeless households and reducing the burden on council budgets.

The analysis draws on a number of sources such as HClic returns, Lettings data from the LAHS, Data relating to the delivery of affordable housing.

The supply and demand for temporary accommodation model can be summarised as follows:

- Incoming placements into Temporary Accommodation
- Outgoing placements from Temporary Accommodation
- Anticipated Homelessness Placements for the coming year
- Increases in the supply of accommodation
- Net requirement for temporary accommodation 24/25

Overall, using this model we have worked on:

1. the supply level where the number of temporary accommodation units to meet the number of homeless TA was manageable and people were able to move through to permanent accommodation in a reasonable time
2. The increase in demand over the last three years and how this has also impacted on our ability to move people through TA.

We have identified that there needs to be a greater number of temporary accommodation units available to avoid excessive use of B&B; and that we need to increase the supply of permanent accommodation. We plan to achieve this by:

- Converting or purchasing 4 additional family units for Static Temporary Accommodation
- Piloting Block booking around 6 units of B&B for a 6 month period.
- Increasing the number of social housing lettings from existing stock to Priority band.
- Ensure all prevention options are considered in partnership with others such as the Basement mediation service, Sanctuary Scheme, Preventing Eviction panel with RP’s.
- Increasing the supply affordable housing through our enabling role.

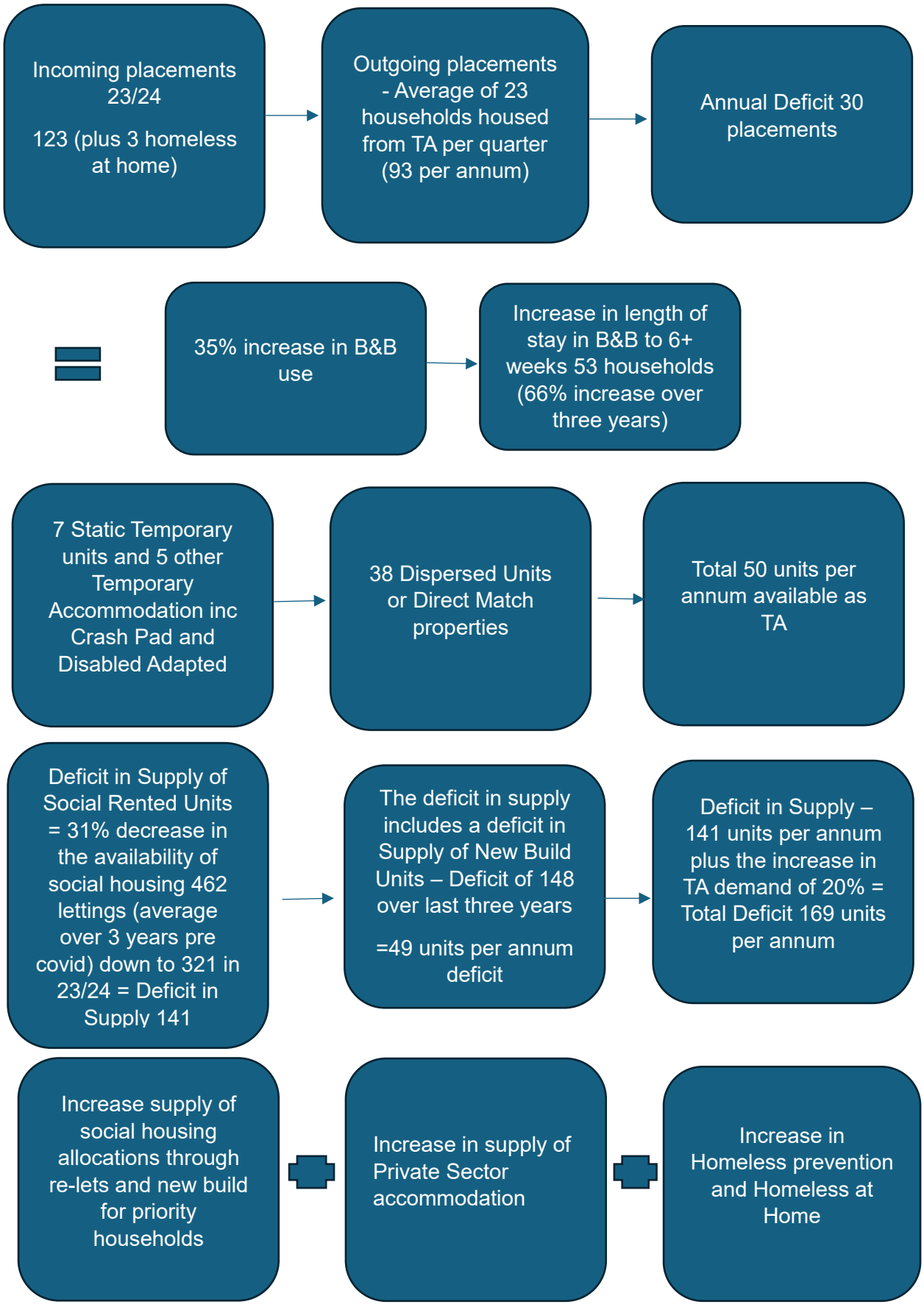
- Provide incentives to private landlords to enable greater access to the private sector.

We have been working with the specialist adviser at MHCLG to learn from good practice as almost 60 other local authorities are experiencing challenges in finding suitable temporary accommodation for the number of families presenting as homeless.

We have developed an action plan with MHCLG to identify additional areas of focus to reduce and manage our use of temporary accommodation and improve our pathway planning into more permanent accommodation, including making greater use of the private rented sector. We have also been advised to use an alternative descriptor to B&B for our shared temporary accommodation with three family rooms and access to their own bathrooms, but sharing a kitchen and lounge area for the purposes of HClic reporting.

The bdht Housing Options Team of 10 officers with decades of experience have held an ‘away day’ to focus on improving personal housing plans and the temporary accommodation referral form and creating a triage form to ensure that the service is proactive in its approach to homelessness.

Summary of the Demand and Supply of Temporary Accommodation



The position regarding the limited supply of accommodation and the increasing demand from homeless households resulting in a reliance on temporary accommodation looks set to continue unless some significant interventions are put in place.

In order to avoid the excessive use of B&B the Council needs to increase the number of static temps and could do this by asking bdht to provide 4 additional family units or by the utilisation of homelessness grant for existing stock orcapital income (received due to the ad hoc sale of Low Cost Housing scheme properties) which could provide a contribution to bdht for the purchase of existing satisfactory dwellings (including flipping shared ownership) with a percentage claw back should they be sold. There is a need for these to be aimed at larger families and the capital reciepts could provide at least 6 family properties.

The budget for static temps for 24/25 is £53,704 when divided by 7 existing units the cost per unit per annum is £7,672. For an additional 4 units would require a revenue budget of £30,688 but would provide TA for around 3 households per unit per annum and would save the Council 6 weeks in B&B at a minimum of £50 per night (£2,100 per household multiplied by 12 households) is £25,200 per annum. Without additional static temporary accommodation it is unlikely that we will be able to meet the requirement to not have families in B&B for more than 6 weeks.

Block booking of good quality B&B could also provide a saving of £10 - £15 per room per night. At £35 per room per night for 6 months for 6 rooms this would require £38,220 budget to enable to work with a provider and secure these units. This would save £16,380 on the usual cost of £50 per room for the same period (£54,600). An alternative approach could involve using the some capital receipt and working with an RP or Spadesbourne Homes to invest and re-model an existing dwelling to provide these units at a nightly rate fee for occupation.

Social housing lettings made to those in Priority Band and Gold Plus Homeless accounted for an average of 32% of all lettings over the last three years of which could be increased through local lettings plans and increase properties made available to this cohort.

During 23/24 the Step Up Private Sector officer and bdht were able to place 16 households into the Private Rented Sector. The LHA rates were reviewed and increased by central government in April 2024 and could provide more opportunities to secure accommodation into the private sector for these households.

Bed and Breakfast Spend

Year	Budget	Expenditure
2018/19	£12,387	£8,784.95
2019/20	£12,387	£11,837.24
2020/21	£12,387	£24,971.50

2021/22	£12,387	£19,311.49
2022/23	£12,387	£59,903.55
2023/24	£12,387	£87,441.26

The expenditure on B&B rose by 210% from 2021/22-2022/23 and then rose again by another 45% the following year.

This is in part due to an increase in placements in B&B, which increased from 34 in 22/23 to 46 in 23/24 which is a 35.29% increase. This is forecast to increase again in 2024/25 to 50 (8.7%). The aggregated difference between 2022/23 and 2025/26 is 47%. In addition, the length of stay is in TA overall is also increasing year on year suggesting that the supply of accommodation is an issue. With the number of households in TA for 6 + weeks being 2021/22 32, 2022/23 48 (50% increase) and 2023/24 53 (10% increase) overall a 66% increase over the whole period.

Whilst B&B costs per room have remained relatively static, there has been an increase of families in B&B, some of whom may require two rooms which also result in additional B&B costs.

The Council's hostel was decommissioned on the 17th August 2020 and whilst it was replaced with 7 static temporary accommodation units, the subsequent increase in B&B seems to indicate an adverse impact due to the loss of this accommodation, possibly due to it being less desirable than the static temps, though the extent of this negative impact is difficult to quantify.

Continuing with the status quo in dealing with homeless households is forecast below with and increase in both placements and costs.

Table 1

	Timeline	Values	Forecast
B&B Placements (incoming)	21/22	35	
	22/23	34	
	23/24	46	
	24/25		50
	25/26		55

Table 2

	Date Period	Values	Forecast
All TA Placements (incoming)	21/22	70	
	22/23	88	
	23/24	126	
	24/25		151
	25/26		179

Table 3 Cost of B&B

Period	Spend	Forecast
31/03/2019	£8,784.95	
31/03/2020	£11,837.24	
31/03/2021	£24,971.50	
31/03/2022	£19,311.49	
31/03/2023	£59,903.55	
31/03/2024	£87,441.26	
31/03/2025		£99,917.51
31/03/2026		£116,323.84

Table 4 -Households with Children in TA by Duration

HOUSEHOLDS WITH CHILDREN - TA Placement ended, by duration	2021/22	2022/23	2023/24	3 Year Average		% increase from 21/22 to 23/24
Up to 7 Days	0	0	4	1	4%	N/A
8 - 21 Days (2 - 3 Weeks)	3	1	3	2	8%	0%
22 - 42 (3 - 6 Weeks)	5	3	7	5	16%	40%
43 - 84 Days (6 - 12 Weeks)	1	6	19	9	28%	1800%
85+ Days (Over 12 Weeks)	9	15	17	14	44%	89%
TOTAL:	18	25	50	31		

Table 5 - Incoming Placements into TA

	2021/22	2022/23	2023/24	% difference	3 Year Average
Homeless Households owed a duty	216	384	347	61%	316

TA Placements made	70	88	126	80%	95
% Requiring TA	32%	23%	36%	13%	31%
43+ Days (6+weeks)	32	48	53	66%	44

The number of placements in TA has risen year on year since 2021/22. From 70 in 2021/22 to 88 in 22/23 (28.6% increase) and 126 in 23/24 (43.18% increase) and an increase of 80% over the whole period.

Use of B&B increased from 34 in 22/23 to 46 in 23/24 a 35.29%n increase.

The Housing Options Team with bdht have been working to ensure alternatives to temporary accommodation are fully explored, encouraging people where they can find their own temporary solutions. This was a successful approach for 19 households in 23/24. In addition, bdht are utilising Homeless at Home for those where remaining at home is safe and appropriate in the short term, and where they still achieve homeless priority through the housing register.

Where the increase in homeless households exceeds the available TA there is a reliance on B&B to meet needs. If we increase the number of static units and dispersed units by 35% and ensure that there is an increase in the supply of accommodation through social housing lettings, the private rented sector and new supply we may be able to reduce our reliance on B&B.

Table 6 - Households Placed in Temporary Accommodation and those who are Homeless at Home

	Placed in TA	Homeless at Home	Total
2021/22	70	0	70
2022/23	88	0	88
2023/24	123	3	126

Table 7 Outgoing TA Placements

2021/22

TA Placement ending in quarter by duration	Q1	Q2	Q3	Q4	TOTAL:	
Up to 7 Days	**2**	**4**	**1**	**2**	**9**	**13%**
8 - 21 Days (2 - 3 Weeks)	**2**	**2**	**2**	**5**	**11**	**16%**
22 - 42 (3 - 6 Weeks)	**6**	**2**	**4**	**3**	**15**	**22%**

43 - 84 Days (6 - 12 Weeks)	**1**	**1**	**4**	**6**	**12**	**18%**
85+ Days (Over 12 Weeks)	**5**	**10**	**2**	**3**	**20**	**30%**
TOTAL:	**16**	**19**	**13**	**19**	**67**	
No. of households with more than 1 placement	**1**	**1**	**0**	**2**	**4**	**6%**

Table 8 – Outgoing TA Placements 2022/23

TA Placement ending in quarter by duration	**Q1**	**Q2**	**Q3**	**Q4**	**TOTAL:**	
Up to 7 Days	**2**	**2**	**2**	**3**	**9**	**12%**
8 - 21 Days (2 - 3 Weeks)	**3**	**4**	**2**	**0**	**9**	**12%**
22 - 42 (3 - 6 Weeks)	**3**	**0**	**2**	**6**	**11**	**14%**
43 - 84 Days (6 - 12 Weeks)	**2**	**4**	**5**	**8**	**19**	**25%**
85+ Days (Over 12 Weeks)	**7**	**8**	**7**	**7**	**29**	**38%**
TOTAL:	**17**	**18**	**18**	**24**	**77**	
No. of households with more than 1 placement	**1**	**0**	**0**	**1**	**2**	**3%**

Table 9 Outgoing TA Placements - 2023/24

TA Placement ending in quarter by duration	**Q1**	**Q2**	**Q3**	**Q4**	**TOTAL:**	
Up to 7 Days	**4**	**5**	**1**	**2**	**12**	**13%**
8 - 21 Days (2 - 3 Weeks)	**5**	**3**	**4**	**2**	**14**	**15%**
22 - 42 (3 - 6 Weeks)	**4**	**2**	**6**	**2**	**14**	**15%**
43 - 84 Days (6 - 12 Weeks)	**7**	**5**	**7**	**3**	**22**	**24%**
85+ Days (Over 12 Weeks)	**4**	**8**	**7**	**12**	**31**	**33%**
TOTAL:	**24**	**23**	**25**	**21**	**93**	
No. of households with more than 1 placement	**5**	**2**	**5**	**1**	**13**	**14%**

The length of stay is increasing year on year suggesting that supply of accommodation is an issue. With the number of households in TA for 6 + weeks being 2021/22 32, 2022/23 48 (50% increase) and 2023/24 53 (10% increase) overall a 66% increase.

Table 10 - The average length of stay of families in TA

	TA Placement ended, by duration	2021/22	2022/23	2023/24	3 Year Average	
Outgoing TA placements (homeless households) FAMILIES IN STATIC TEMP	Up to 3 months (91 days)	2	2	3	2	21%
	3 - 6 months (92 - 183 days)	5	7	4	5	47%
	6 - 9 months (184 - 274 days)	0	3	7	3	29%
	9 - 12 months (275 - 365 days)	0	0	1	0	3%
	12+ Months (366 days)	0	0	0	0	0%
	TOTAL:	7	12	15	11	
	Avg duration in days	112	142	177	144	

On average 23 households were re-housed from TA per quarter, but there was a need to provide 31.5 households with temporary accommodation during that quarter which is a shortfall of 8.5 units per quarter.

Table 11: Units of Temporary Accommodation Currently Available

7 Static Temps including 2 safe units of accommodation, 38 DU's, I disabled adapted static temp, 3 units Spring House prioritising domestic abuse)

Address	Client group	No of units	Facilities
Static Temporary accommodation	General needs	7	7 self contained multiple occupancy units (including two safe accommodation units)
New Rd Rubery	Disabled	1	1 bed self-contained Unit (adapted)
Crash Pad St Basils, New Rd, Aston Fields Bromsgrove	Priority for 16/17 year olds but can be used for vulnerable adults up to 23 years	1	1 self-contained unit
Dispersed Units in BDHT stock drawn down as required	General needs and older people	38	Various
Spring House Lickey End, Bromsgrove	Priority for domestic abuse hate crime etc	3	2 x 1 bed units plus 1 bedsit

Table 12 Temporary Accommodation Rents and Charges

Address	9a, 9b, 9C Springhouse	2 Ivy House	30 Kempton Court	171 Austin Road
Rent	**£104.04**	**£104.04**	**£102.20**	**£91.68**
S/C	**£7.06**	**£15.17**	**£10.70**	**£2.16**
Ineligible Utilities	**£27.50**	**£27.50**	**£27.50**	**£27.50**
Total	**£138.60**	**£147.75**	**£140.40**	**£121.34**

Address	171a Austin Road	17 Finstall Road	31 Humphrey Avenue	340 Lyttleton Ave
Rent	£90.47	£129.95	£108.75	£98.24
S/C	£2.16	0	£2.00	£10.65
Ineligible Utilities	£27.50	£27.50	£27.50	£27.50
Total	£120.13	£157.45	£138.25	£136.39

Address	19 Talbot Road	Guest Room	B&B* 1 Adult	B&B* 2 Adult
Rent	£98.24	£70.00	£19.52	£20.14
S/C	£4.89			
Ineligible Utilities	£27.50	£22.48 Extra Care and Lifeline	Breakfast £3.10 Adult £2.602 Child	Breakfast £3.10 Adult £2.602 Child
Total	£103.63			

*If more than 1 person and 1 room an additional 0.62p per person.

Table 13 - Households Placed in Temporary Accommodation and those who are Homeless at Home

	Placed in TA	Homeless at Home	Total
2021/22	70	0	70
2022/23	88	0	88
2023/24	123	3	126

Table 14 - Social Housing Lettings 2023/24 (LAHS)

Previous 3 year average 17/18-19/20	20/21	21/22	22/23	23/24
462	352	304	330	321

Prior to the Covid pandemic the Council would have ordinarily expected to see around 462 lettings per annum. The Covid pandemic meant that less people were able to move, and subsequently there have been less opportunities to move due to supply issues and cost of living issues.

Table 15 - Percentage of lettings to Priority Band and Gold Plus Homeless. (Civica/Abritas Report Sept 2024)

Lettings Data:	2021/22	2022/23	2023/24	3 Year Average	
Total Lettings Accepted	318	313	323	318	
BDHT	273	259	214	249	78%
Other	45	54	109	69	22%
To verified Homeless cases	93	109	104	102	32%
%of lettings allocated to Homeless Cases	29%	35%	32%	32%	32%
Of which:					
Priority	36	50	51	46	45%
Gold Plus	53	58	53	55	54%

The number of lettings to homeless households (who may or may not be in temporary accommodation) has increased by 12% over the last three years. The lettings to priority homeless who are more likely to have been in temporary accommodation has increased by 42% over the last three years.

Table 16 - Direct Matches

36 direct matches were made in 23/24. There is no historical data to compare this to previous years and there are currently 6 Dispersed Units in use.

Table 17 - New Units of Affordable Housing

2021/22	**36**
2022/23	**9**
2023/24	**83**
Grand Total	**128**

The affordable housing need is 92 properties per annum. The council has fallen short on this requirement and over the last 3 years this has resulted in a deficit of 148 affordable housing units from the 276 required in the HEDNA.

Bdht Estimated affordable housing completions within BDC for 2024/25:

Shared Ownership: 22
Social Rent: 64
Total: 86

This means that there will be another deficit of a further 6 properties for 24/25.

BDHT stock

Bdht owns 4,236 properties (some of which are static temps and leaseholders).

55 maisonettes, 1972 Houses (53 one bed houses, 655 two beds, 1182 three beds, 80 four beds, two five beds. 1733 flats 468 bungalows, 8 bedsits.

Table 18 - Reasons for Approach in Relief

Reason for Loss of Settled Home (Relief Duty owed)	2021/22	21/22%	2022/23	22/23%	2023
Blank/Unkown	0.00	0%	0.00	0%	
Departure from insitution: Custody	0.00	0%	3.00	2%	
Departure from institution: Hospital (general)	0.00	0%	0.00	0%	
Departure from institution: Hosptial (psychiatric)	1.00	1%	0.00	0%	
Domestic abuse - alleged perpetrator excluded from property	2.00	2%	1.00	1%	
Domestic Abuse - victim	24.00	26%	30.00	23%	
End of private rented tenancy - assured shorthold tenancy	7.00	8%	24.00	19%	
End of private rented tenancy - not assured shorthold tenancy	3.00	3%	0.00	0%	
End of social rented tenancy	2.00	2%	3.00	2%	
Eviction from supported housing	4.00	4%	0.00	0%	
Family no longer willing or able to accommodate	16.00	17%	30.00	23%	
Friends no longer willing or able to accommodate	3.00	3%	10.00	8%	
Home no longer suitable due to disability / ill health	1.00	1%	8.00	6%	
Left HM Forces	0.00	0%	0.00	0%	
Left institution with no accommodation available	2.00	2%	0.00	0%	
Mortgage repossession	0.00	0%	0.00	0%	
Non-racially motivated / other motivated violence or harrassment	2.00	2%	5.00	4%	
Other	15.00	16%	0.00	0%	
Property disrepair	3.00	3%	1.00	1%	
Racially motivated / other motivated violence or harrassment	0.00	0%	1.00	1%	
Relationship with partner ended (non-violent breakdown)	6.00	7%	12.00	9%	
Required to leave accommodation provided by Home Office as asylum support	1.00	1%	0.00	0%	
Total	**92.00**	**1.00**	**128.00**	**1.00**	1

Reasons for Approach in Relief

The highest reasons for approach is from victims/survivors of Domestic Abuse. The Domestic Abuse Act 2021 has provided an improved response to those victims and survivors of domestic abuse requiring accommodation. The investment in a specialist officer and support service has seen the number of domestic abuse cases rise due to better identification of cases with many households accessing from out of area such as Birmingham and Dudley, both of which border the Bromsgrove District Council boundary.

The second highest reason for approach is being asked to leave by family and friends. It would be helpful to explore whether there are more opportunities to support these individuals and families to remain at home for longer. A consultation piece around this could identify the triggers for this and help to direct prevention funding to reduce these numbers.

Other Emerging Pressures

The Asylum Seeker Dispersal Scheme will require Bromsgrove to provide more housing for asylum seekers and asylum claims are being assessed and eligibility decisions are being made which will put more pressure on services.

Access to the Private Rented Sector

Local Housing Allowance Rates were increased in April 2024 which may enable more households who rely on benefits or are on low incomes, to access this tenure.

Table 19 - LHA Rates

LHA RATES 2024 / 2025								
	Worcs North		Birmingham		Black Country		Solihull	
	WEEKLY	MONTHLY	WEEKLY	MONTHLY	WEEKLY	MONTHLY	WEEKLY	MONTHLY
Shared	75.91	328.94	78.61	340.64	73.64	319.11	94.93	411.36
1 bed	118.52	513.59	159.95	693.12	113.92	493.65	161.10	698.10
2 bed	149.59	648.22	172.60	747.93	143.84	623.31	189.86	822.73
3 bed	172.60	747.93	189.86	822.73	172.60	747.93	230.14	997.27
4 bed	228.99	992.29	253.15	1096.98	212.88	922.48	316.44	1371.24

Savings on Storage

There are further savings that could be made by not furnishing TA. This could lead to a saving on storage and only by exception providing furniture – eg beds from IKEA and other furniture from NewStarts. Otherwise allowing households to take their own furniture rather than using storage.

Storage budget is £3,500 and in 23/24 £16,320 was spent on storage. The income is included in the rent collection process by bdht and currently cannot be offset against the spend. This system of accounting is being reviewed and improved.

Link to LGA report

https://inews.co.uk/news/more-council-bankruptcies-fear-temporary-housing-costs-billion-3135919

Table 20 - UK Housing Crisis Data

The housing crisis in numbers

	2004	2024
Backlog of households who need homes	950,000	3.7 million
Young adults (age 20 to 35) living with parents	11.7 million (22%)	12.9 million (28%)
Proportion of households (age 25 to 34) owning their own home	58.60%	44.70%
Proportion of all households owning their own home	70.70%	64.80%
Proportion of households privately renting	11%	19%
Ratio of median house prices to median earnings	5.1	8.3
Average price of a home	£192,000	£360,000
Average age of a first-time buyer	31.4	33.5
Households in temporary accommodation (such as hostels)	94,000	113,000
Overcrowded households	486,000 (2.4%)	708,000 (2.9%)

Table: The Times and The Sunday Times • Source: HBF, ONS, MHCLG

Action Plan

Bromsgrove Temporary Accommodation Action Plan 2024

	Action	Outcome	Benefits	Ownership	Timescales
1.	Increase Static Temps by 4 units either from existing bdht stock or the purchase of existing satisfactory dwellings form the open market.	4 additional Static Temp Units	Better quality accommodation for families and reduced B&B costs to the Council.	Strategic Housing/bdht	Dec 2025
2.	Increase the supply of accommodation through enabling more new build and flipping shared ownership.	Additional supply of family accommodation available to homeless households	Swifter move through TA and into permanent accommodation for households.	Strategic Housing/bdht	Dec 2005
3.	Increase the number of social rented properties let to homeless families by agreement with bdht and the use of Local Lettings Plans.	Increase in accommodation available for homeless households.	Swifter move through TA and into permanent accommodation for households	Strategic Housing/bdht	March 2025
4.	Review and improve Personal Housing Plans	To improve these plans for households to understand housing pressures and look at other	Better understanding of housing supply issues and alternative tenures	Bdht Housing Options Team	Sept 2024

		housing options.			
5.	Review and improve Temporary Accommodation Referral form and process to ensure sign off by Temporary Accommodation Officer for any placements.	Ensure temporary accommodation is used as a last resort where other suitable housing is available.	Reduce number of households requiring Temporary Accommodation	Bdht Housing Options Team	Sept 2024
6.	Provide a triage form for reception to utilise to prioritise approaches and ensure that opportunities to prevent and relieve homelessness are maximised.	Understand presenting needs and proactively supporting households to understand the process and work to find solutions from day one.	Reduce the number of households requiring temporary accommodation and acting quickly to prevent homelessness from occurring wherever possible.	Bdht Housing Options Team	Sept 2024
7.	Consider pilot block booking 6 B&B units for a 6 month period to achieve a better daily rate.	Improved B&B offer and reduced cost to the Council	Better B&B accommodation with cooking facilities for families and reduced costs for the Council.	Strategic Housing/bdht	March 2025

8.	Learn from Homes 4 Ukraine and improve Access to PRS by working more pro-actively with landlords.	Additional supply of family accommodation available to homeless households	Swifter move through TA and into permanent accommodation for households	Strategic Housing/bdht	Dec 2024
9.	Increase Spend to Save budget to support households into the private sector including lodging to provide deposits and rent in advance.	BDC to provide additional HPG	More housing options available.	Strategic Housing	Dec 2024
10.	Continue to promote Sanctuary Scheme to victims/survivors of domestic abuse, where safe to do so.	Reduction in Homelessness due to Domestic Abuse	Households are able to remain at home and retain support and social networks. Children are able to remain in school.	Strategic Housing/bdht	Sept 2024
11.	Create Affordable Housing Development Group with Planning. Legal and Finance to create a greater understanding of supply and demand issues and work jointly towards improving supply.	Additional supply of family accommodation available to homeless households	Swifter move through TA and into permanent accommodation for households	Strategic Housing	Sept 2024
12.	Work with RP's to ensure that supply of affordable housing is increased particularly in respect of larger family houses.	Additional supply of family accommodation available to	Swifter move through TA and into permanent accommodation for households	Strategic Housing/bdht	Dec 2024

		homeless households			
13.	Work pro actively with Spadesbourne Homes to access accommodation for those who are working or able to afford private rents.	Additional supply of family accommodation available to homeless households	Swifter move through TA and into permanent accommodation for households	Strategic Housing/bdht	Sept 2024
14.	Consider Private Sector Leasing Opportunities that present to the Council	Additional supply of family accommodation available to homeless households	Swifter move through TA and into permanent accommodation for households	Strategic Housing	Dec 2024
15.	Continue to support Homelessness Prevention Services.	Homeless is prevented wherever possible.	Fewer households becoming homeless.	Strategic Housing/bdht	Sept 2024
16.	Hold regular RP Homeless Prevention Panel meetings	Work with RP's to prevent eviction and avoid homelessness wherever possible.	Fewer households becoming homeless.	Strategic Housing/bdht	March 2025
17.	Continue to encourage more households to remain homeless at home	Work with households to utilise Homeless at Home whilst	Fewer households becoming homeless.	bdht	Sept 2024

		retaining their homeless banding on the housing register.			
18.	Utilising YPPW and trained mediators with Basement project for young people to support them to remain in their home where it is safe and appropriate for them to do so.	Work with young people to help them to remain at home where it is safe and appropriate for them to do so.	Fewer households becoming homeless.	Bdht and partners	Dec 2024
19.	Ensure that support is in place for all clients where they need it either through 360 support, Basement or Rooftop specialist support for Domestic Abuse	Help households to sustain accommodation where it is appropriate and safe for them to do so. Help to achieve planned moves into alternative accommodation where possible.	Fewer households becoming homeless. Using the Housing Allocations Policy to support access to affordable housing wherever possible.	Bdht, Basement Project, Rooftop.	Ongoing
20.	Carry out research into why people are being asked to leave by family and friends and what measures might have prevented or delayed this.	Understand the causes of homelessness	Fewer households	R&I Officer and partners	March 2025

		better from this cohort.	becoming homeless		
21.	Utilise HClic and Housing Register Data to monitor success	Ensure that regular monitoring is in place to review the success of this action plan.	A continual review process is in place to keep track of homelessness and the use of TA.	Strategic Housing	Dec 2024

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Updated November 2024

Bromsgrove District Council Carbon Reduction Strategy & Action Plan V6.1

Contents

Background & Introduction

Globally, governments have committed to keep within a 1.5ºC increase in temperature to avoid catastrophic impacts from climate change. UK Government has committed to Net Zero by 2050. Local authorities (LA) are key in taking and influencing action on climate change due to the services they deliver, their regulatory functions, strategic functions, procurement powers and responsibilities as major employers. Evidence supports that Bromsgrove District Council should make carbon reduction key to what it does as a Council to support national, regional & local targets. Currently the carbon emissions associated with Worcestershire are approximately 2.5 million tonnes, the district of Bromsgrove is responsible for 669,200 tonnes of this and the Council, with emissions of 818 tonnes, seeks to play its part in the reduction of these figures.

Bromsgrove District Council declared a climate emergency in 2019. On declaration of a climate emergency, an LA is affirming that it will place the Climate Emergency at the centre of its decision-making process. LAs are then expected to develop carbon reduction targets and action plans to assist in the reduction of carbon emissions, from their own council functions and using their sphere of influence.

Our thanks go to Alex Pearson from Nottingham City Council and the Midlands Net Zero Hub for his support and work authoring this document.

This plan will be refreshed every 3 years and reviewed annually.

Progress against targets will be reviewed twice a year.

50% reduction in carbon dioxide emissions by 2030

Net Zero by 2040

Sue Hanley Chief Executive Councillor Bernard McEldowney Portfolio Holder for Climate Change

Our Key Successes and Top Five Future Actions

Key successes:

Measure	Estimated annual saving in tonnes CO_2	Service area
Office for Low Emission Vehicles (OLEV) funded electric taxi and public charging infrastructure scheme - Carbon savings for the wider area, beyond council operations.	126	All service areas
Bromsgrove Zero Carbon District Heat Network feasibility study - no emission savings from this stage, these will come when the project is built out.	n/a	Community & Housing Services
Low carbon heating & Solar PV project at the Artrix Centre.	100	Legal, Democratic & Property Services
Purchase of 100% Green Electricity for the Council.	98	Finance and Customer Services
First delivery of HVO low carbon fuel for Council diesel fleet.	50	Environmental Services
Total Estimated annual CO_2 savings **(These are already included in the current net zero target)**	374	

Top five future actions:

Measure	Estimated annual saving in tonnes CO_2	Service area	Target Completion Date / Review Date
Assess further low carbon fleet fuel options.	349	Environmental Services	Review Spring 2023, completion of fuel switch 2040
Seek commercial partners to build out the Bromsgrove District Heat Network.	100	Community & Housing Services	Initial meeting to be held with Green Heat Networks Fund by Dec 2022
Support Bromsgrove District Housing Trust to apply for funding to improve efficiency of housing stock.	n/a (however, 50 saving for the District of Bromsgrove)	Community & Housing Services	01/06/2023 for completion of some funded schemes
Set up a rolling programme of works to improve energy efficiency/ renewable generation in the buildings with the highest consumption.	48	Legal, Democratic & Property Services	Ongoing - October 2022 for the next applications to the Salix funding scheme
Implement Recommendations of the 2020 Energy Saving Trust report into decarbonising the Council's transport fleet including staff mileage and travel plans across all service areas.	36	Transformation & Organisational Development Service /All service areas.	2025 to review progress.
Total estimated annual CO_2 savings **(these will count towards the net zero target)**	533		

Commitment & Integration

Background: The Council is committed to carbon reduction through its declaration of a climate emergency in 2019. Our commitment to reducing our carbon emissions and influencing the reduction of local carbon emissions goes hand in hand with the 'net zero by 2050' target set by the UK Government. As a Council we feel that net zero by 2040 is achievable - a goal that requires us and all sectors to pull together to achieve.

What are we currently doing? We have embarked on a journey of delivering Carbon Literacy Training to our staff and councillors and this will put climate action into the hands of everyone and can deliver between 5-15% real carbon savings per individual. Each of the Council's service areas has contributed to this plan in order to produce 'carbon reduction pathways'. Through this approach carbon reduction will become 'business as usual' and truly embedded throughout the organisation. Each service area in Bromsgrove District Council has been involved in the formulation of this plan and are committed to delivering the actions in the implementation plan.

What further actions are we going to take? This plan will be our route map to 'net zero' for our internal activities. It will also highlight where we are trying to influence the reduction of carbon emissions from other places outside the Council's activities.

The views of residents and partners are reflected in this plan, and they have helped to shape the actions that we are going to take. We are committed to considering the environmental impact of our decisions as a Council at every stage.

Our implementation plan (forming part of this strategy) will deliver real and quantifiable carbon reductions. This strategy will be monitored twice yearly by the Cabinet Advisory Group within the Council with annual progress being sent to the Cabinet. Key to the delivery of this strategy is the integration of plan objectives and targets with every aspect of Council service delivery. To this end a collaborative approach involving all heads of service and their teams has been taken. We will link this strategy to corporate performance indicators and provide a specific 'project based' focus for the Council.

Partnership Working

Background: In order to deliver the action plan, it is vital that we work closely with partners, in order to reduce the carbon emissions of the district as a whole. The Council's own emissions are a small part of the overall figure, and it is important that we use our sphere of influence to encourage others to address their own emissions. Shared learning is a powerful tool to enable carbon reduction and the Council can both learn from and influence a wide range of stakeholders across the district including Parish Council's. The Council can also benefit from partnership working with the county, bordering local authorities, neighbouring District Council's, regional and national organisations by seeking out and engaging the support that may be available.

What are we currently doing? We currently work closely on a district level with partners such as:

- 'Everyone Active' who run our sports and leisure facilities.
- Worcestershire County Council to ensure that homes and businesses can benefit from the advice and grants that are made available through the Sustainability Team.
- Joint Worcestershire and Herefordshire Waste Partnership group working towards waste reduction and better waste management across the county.
- Worcestershire Regulatory Services to promote Electric Taxis through the licensing system.
- Local Enterprise Partnership (LEP) and some of the targets set in this strategy reflect the LEP Energy Strategy of 2019.
- Midlands Net Zero Hub on several carbon reduction projects (some of which form part of the action plan),
- The West Midlands Combined Authority, and Sustainability West Midlands.
- The Energy Saving Trust to look at carbon reduction options across our vehicle fleet.

What further actions are we going to take?

Action	Estimated annual CO_2 saving where applicable	By when
Attend monthly sustainability officers group meetings, organised through the County Council in order to share learning.	n/a	Ongoing
Investigate opportunities for carbon reduction with our suppliers and delivery partners.	n/a	Ongoing
Ensure that our Carbon Reduction Strategy is in line with the other Worcestershire district Councils by reviewing plans annually	n/a	Ongoing - annually
Work with Worcestershire Regulatory Services to investigate how we might develop a Street Trading Policy to encourage low carbon and sustainable trades to operate in the local area.	n/a	2024
We will also continue to explore options with Worcestershire County Council and local businesses to encourage walking and cycling to work.	n/a	Ongoing

Community Engagement & Communication

Background: The residents of Bromsgrove have expressed a wish for their Council to address the climate emergency and lead the way through carbon reduction. A recent survey indicated that 92% of residents are concerned about climate change and the impact it is having and 87% told us that dealing with climate change should be a key priority for the Council.

What are we currently doing?

- Carbon reduction has a dedicated webpage on the Council's website and there is consistent messaging around waste and recycling.
- Community engagement events are held regularly on a diverse range of subjects relating to energy, waste and environment.
- The Green Fair and 'fun-day' is a key event to communicate the message of a low carbon future to the wider community and 2022 sees the return of this popular event in Sanders Park.
- Within the Council an electronic internal staff newsletter has regular features relating to carbon saving projects that staff should be aware of.

What further actions are we going to take?

Action	Estimated annual CO_2 saving where applicable	By when
All service areas to have email footers promoting carbon saving and resource reduction.	n/a	April 2023
Update our website more regularly with news on carbon reduction in addition to regular e-mail newsletters and a refreshed social media policy.	n/a	Quarterly updates - ongoing
Develop a Communications Plan to promote biodiversity and land management actions within the authority.	n/a	Ongoing
Work with Bromsgrove District Housing Trust (BDHT) to apply for funding to ensure that their housing stock is as efficient as possible – taking carbon saving to the heart of the community.	n/a	Ongoing – continuation of applications to various government funding streams
Include energy efficiency advice in 'tenant packs' for householders in addition to information on waste and recycling.	n/a	Ongoing – development of leaflet for pack
Examine opportunities to make the best use of the Green Fair to communicate the carbon & waste reduction message	n/a	Ongoing

Co – benefits

Background: Co-benefits can be described as an additional outcome linked to a carbon reduction action. An example could be cleaner air in a town centre as a benefit of the adoption of zero emission vehicles, or financial benefits accruing to the Council as a result of energy efficiency measures. Co-benefits can also be related to habitat creation and improved access to existing green spaces, development of the low carbon economy, skills and training or job creation and retention.

What are we currently doing? We are making use of our open spaces to promote health and well-being through 'social prescribing' in order to lift levels of physical activity. We are also part of a 'Cultural Compact' with Heart of England Forest to ensure that woodland activities such as tree planting leverage the maximum benefit. The Council has recently completed a Government funded programme to install chargers for electric taxis, an important co-benefit of this will be cleaner air in the Town Centre as a result of zero emission vehicles.

What further actions are we going to take?

Action	Estimated annual CO_2 saving where applicable	By when
We will continue to evaluate the most appropriate size and location of electric vehicle charge points, in order to enhance air quality in the district.	n/a	Ongoing
The Council will examine the type of fuel used in its fleet vehicles in order to build on work commissioned from the Energy Savings Trust to assess the current fleet and provide guidance.	349	Ongoing – long term options to be considered when current trial of vegetable oil based fuel is concluded in 2023
The Council will also look to use a standardised method of assessing co-benefits to help inform investment decisions in the future.	n/a	Ongoing
Work with the Growth Hub to signpost businesses to available funding in order to stimulate and grow the green economy within the district of Bromsgrove.	n/a	Meeting between economic development team and Growth Hub to be arranged by April 2023
Cross reference Leisure and Culture Strategy with this document to assess scope for further decarbonisation projects.	n/a	Ongoing

Equality, Diversity & Inclusion

Background: Carbon reduction and social justice have historically gone hand in hand in support of the United Nations sustainable development goals. Green spaces are open to all residents and facilities will continue to be improved. Through joint working with BDHT, it will be ensured that low carbon technologies and energy saving will not be the privilege of a select few.

What are we currently doing? As an employer and deliverer of services, Bromsgrove District Council has stated in its Equality Strategy 2022-2026 that it is committed to eliminate unlawful discrimination, promoting equal opportunities and fostering good relations between people from all communities.

What further actions are we going to take? Bromsgrove District Council will ensure that where funding is available to support green entrepreneurs from all backgrounds, it will be effectively applied.

Action	Estimated annual CO_2 saving where applicable	By when
Align our Equality Strategy with the United Nations sustainable development goals when the review occurs in 2026.	n/a	2026
We will work with local training providers to ensure that opportunities in the green economy are available to all.	n/a	Ongoing
Bromsgrove District Council will ensure that where funding is available to support green entrepreneurs from all backgrounds, it will be effectively applied.	n/a	Ongoing

Ecological Emergency

Background: The natural environment is vital to the health and wellbeing of society and provides 'eco system services' to regulate our environment, produce clean air and pollinate our crops. An ecological emergency is when the natural environment has been damaged and the ability to provide 'eco system services is reduced'. The ecological and climate emergencies are linked. Significant carbon dioxide emissions are caused by land use change, which is also a key driver for ecological loss. The interdependencies between the species in the natural world are not all fully understood and it is vital that we act to protect biodiversity on a local, national, and global level. The Council perceive the Climate and Ecological Emergencies are intrinsically linked and therefore in the adoption of this strategy and action plan, the Council is addressing the ecological emergency through the same route maps in this document.

The district of Bromsgrove contains several areas of land ranked moderate to high value for conservation and wildlife for e.g Lickey, Waseley and Clent Hills which are important safeguarded heathlands. Corridors of land linking these areas are also important for the ecology of the area. In areas where the public has access, co-benefits such as improved health and well- being should be considered, and opportunities explored.

What are we currently doing? Bromsgrove District Council works closely with Worcestershire County Council to manage sites for wildlife where possible. Currently we are implementing new management techniques for road verges in certain agreed areas, this allows native species to flourish and set seed, whilst providing a useful wildlife corridor and habitat for pollinators. The Council has been communicating this policy through a dedicated webpage, in order to keep the public informed.

What further actions are we going to take?

Action	Estimated annual CO_2 saving where applicable	By when
The Council will develop a Communications Plan to promote biodiversity and land management actions within the authority.	n/a	Ongoing
In partnership with Worcestershire County Council, a survey of suitable sites is ongoing to identify sites that are suitable for wildlife. This includes the possible expansion of the wild verges policy and ensure that new developments include biodiversity net gain, including for example pollinators in parks and Council owned open spaces.	n/a	Ongoing
Investigate the use of urban space for living walls and investigate opportunities for local carbon offsetting through tree planting and habitat creation.	n/a	Ongoing
Where landscapes and habitat areas are managed by the Council, we will look to eliminate petrol powered hand tools such as strimmers and chainsaws as soon as is practicable.	n/a	Ongoing

Education skills and training

Background: High quality jobs in the growing 'clean tech' sector will ensure that the district of Bromsgrove remains an attractive place for people to live and work. It is vital that we support our further education establishments to deliver high quality vocational training to our young people and those who wish to retrain for roles in the 'Low carbon economy'. The Heart of Worcestershire College has a campus in Bromsgrove and there are opportunities for local companies to provide apprenticeship places through national, regional, and county wide schemes.

What are we currently doing?

- We are working with the Midlands Net Zero Hub to understand the findings of their 'Low Carbon Goods and Services' study of Worcestershire.
- Potential skills gaps have been identified that our local further education providers could help resolve.
- We work with the colleges through the Bromsgrove Partnership Executive Group, Bromsgrove Towns Deal Board and both the Greater Birmingham & Solihull Local Enterprise Partnership and the Worcestershire Local Enterprise Partnership on the skills agenda.

What further actions are we going to take?

Action	Estimated annual CO_2 saving where applicable	By when
We will work closely with further education training providers and both Local Enterprise Partnerships to ensure that any new suitable funding streams can be sign posted.	n/a	Ongoing – to be reviewed quarterly
We will also continue to work with the Midlands Net Zero Hub to make use of the findings in the Low Carbon Goods and Services report.	n/a	Ongoing – meet monthly with Net Zero Hub Officer
Carbon Literacy short courses will be promoted to Bromsgrove residents wanting to know how to reduce their carbon footprint.	n/a	Ongoing.

Governance, Development & Funding

Background: The climate emergency declaration means that the current governance structure of the Council is used to provide direction and oversee delivery of low and zero carbon initiatives. Carbon reduction projects are currently developed within the Council and resourced through existing service areas. To make the best use of Council resources, other funds are sought in order to maximise carbon savings, Government funding for decarbonising buildings becomes available periodically in funding 'rounds. In addition to these funds from Central Government there are regional, and county administered schemes that the Council can make use of. There are also investment opportunities in areas such as renewable heat and power generation through joint ventures and direct investment.

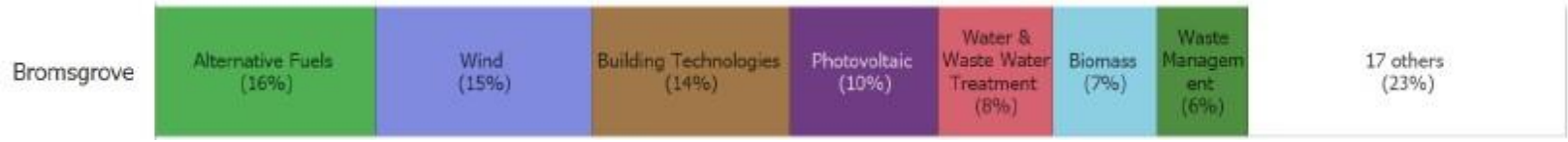
What are we currently doing? The Council has also been successful in securing funding from the Public Sector Decarbonisation Scheme for the Artrix Centre making a carbon reduction of 126 tonnes saving £16,000 per annum through the installation of heat pumps and solar panels. The Council has also applied for 'Public Sector Energy Efficiency Programme' funding for the Parkside Building. There are over 150 tonnes of carbon savings per year associated with both of these projects.

What further actions are we going to take? The governance required to deliver this plan will be provided by the existing Bromsgrove Cabinet Advisory Group.

Action	Estimated annual CO_2 saving where applicable	By when
Bromsgrove Cabinet Advisory Group to monitor progress against targets and evaluate potential new projects, before submission to the Cabinet.	n/a	Bi annual meetings to commence in 2023
The Council will ensure that it is in a position to take advantage of future funding opportunities by maintaining a pipeline of suitable projects.	n/a	Pipeline to be monitored bi-annually.
Where projects are funded directly through Council resources, a measure of best value for carbon reduction will be applied in conjunction with affordability to ensure the most efficient and effective use of Council resources.	n/a	Ongoing

Low Carbon Economy

Background: The district of Bromsgrove has 21% of the overall Worcestershire sales figure for the low carbon economy. Bromsgrove also has 16% of the companies engaged in this sector, and 26% of the total number of this sectors employees. The low carbon economy in Bromsgrove grew by 4.6% in 2019/20 and employs 2,946 people across the district. A breakdown of the local low carbon economy is shown below:

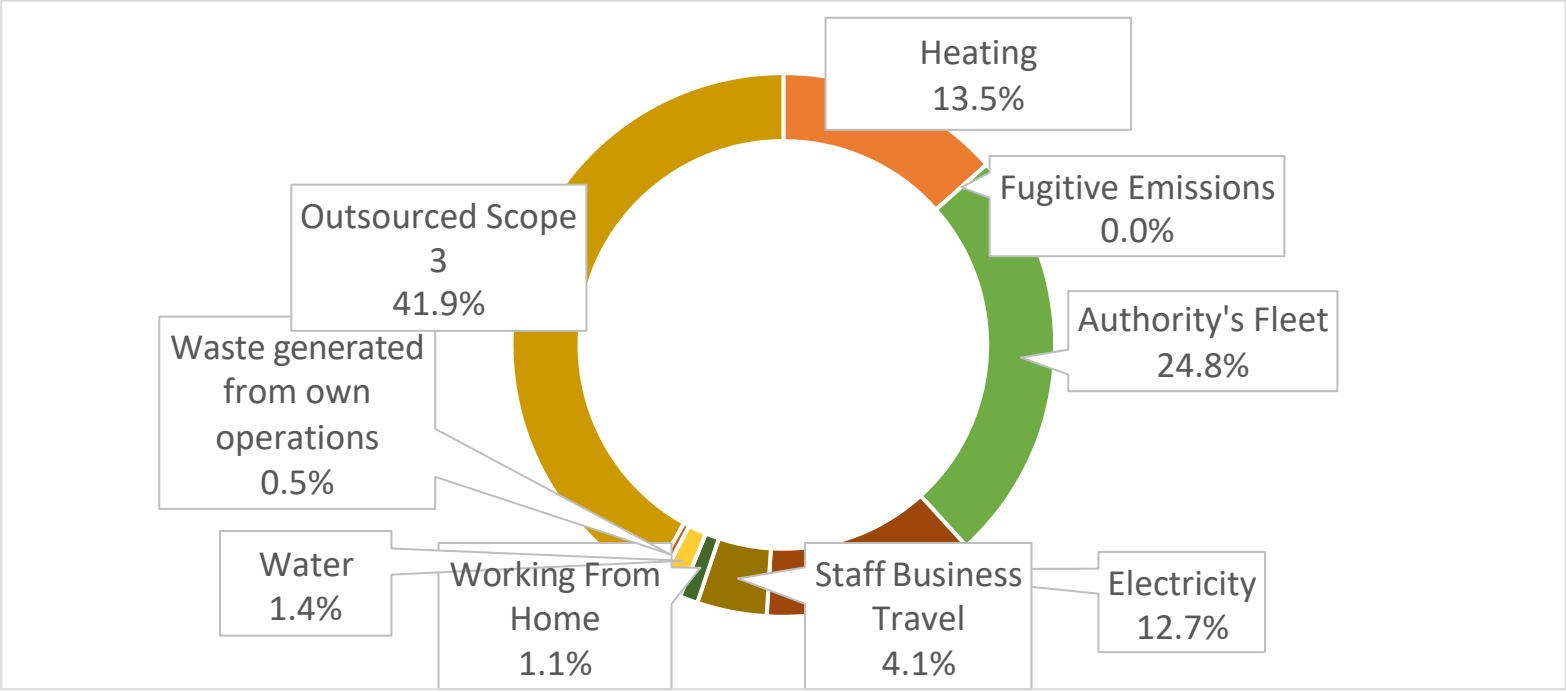


What are we currently doing? The Economic Strategy for Bromsgrove is delivered by North Worcestershire Economic Development and Regeneration (NWeDR). Appropriate grants administered by the County Council and others are signposted to local businesses. Both Worcestershire Local Enterprise Partnership and Greater Birmingham & Solihull Local Enterprise Partnerships have growth hubs that cover the area. We have delivered support for business looking to transition to EVs in conjunction with the Energy Savings Trust, delivering a webinar that we are going to host on our website to signpost businesses to for information. We have delivered the taxi EV rapid network to support local taxi businesses in transitioning to EV – they benefit from reduced charging tariff and monthly EV news and updates on benefits of EV and how to guides.

What further actions are we going to take?

Action	Estimated annual CO_2 saving where applicable	By when
Include the findings of the Midlands Net Zero Hub 'low Carbon Economy Goods and Services report' in the next iteration of the North Worcestershire Economic Growth Strategy.	n/a	Nest review of North Worcestershire Economic Growth Strategy
Continue to sign post support available to this sector through both County and National Schemes.	n/a	Ongoing

Measuring and setting emissions targets



A breakdown of the Council's carbon emissions is shown above

Background: Official carbon emission figures for the district of Bromsgrove are currently available from the department of Business Energy & Industrial Strategy (BEIS). These figures are for the activities that take place within the district, the totals represent both the direct emissions from the activities of the Council and the emissions that the Council has influence over. All Councils must be 'net zero' by 2050, this means that direct emissions from services must be as low as possible, and the remaining emissions are likely to require 'offsetting'.

What are we currently doing? Bromsgrove District Council are working hard to quantify and understand the emissions associated with our activities. By using the latest data resulting from this exercise we can set meaningful targets that inform our implementation plan and lead to effective carbon reduction projects and measures. Projects such as the Bromsgrove District Heating Network, and the further decarbonisation

of Council buildings are key to reducing our emissions and playing our part in achieving the nationwide target of net zero by 2050. Further the Councils fleet will be fuelled by HVO until alternative vehicles are sourced.

What further actions are we going to take? The Council will re commence carbon reporting, and these figures will be used to monitor performance against this plan. Carbon reduction targets in line with the other Worcestershire districts are adopted through this plan in addition to the Local Enterprise targets of 50% by 2030 and net zero by 2040. Currently the carbon emission figure for the district of Bromsgrove is 669,200 tonnes per year (2019). The latest carbon emission figure for Bromsgrove District Council is 818 tonnes (2019). In order to reach an interim target of 50% by 2030 we will need to reduce our emissions by approximately 41 tonnes of carbon dioxide per year. To achieve net zero in the remaining 10 years to 2040 we will need a target of approximately 51 tonnes of savings per year.

Action	Estimated annual CO_2 saving where applicable	By when
Achieve 41 tonnes of savings annually	41	Ongoing from 2022 to 2030

The Action Plan has been designed to deliver these savings and will be reviewed bi-annually by the Cabinet Advisory Group and annually by the Cabinet.

Mitigation & Adaptation

Background: The actions that the Council can take to reduce carbon emissions and address the ecological emergency fall into two categories, measures that influence others and direct measures with an associated figure for carbon reduction. The first actions are to address the emissions associated directly with Council activities such as service delivery. Mitigation is where we adapt our services to try and prevent the severity of climate change, adaptation is where we must change what we do as a consequence of the impacts of climate change, we cannot affect. Like selecting water resistant species in parks etc or emptying bins in the cooler part of the day as temperatures increase.

What are we currently doing? All heads of service and managers have provided input to help formulate this plan. Most of the mitigation and adaptation measures have grown from projects and practices that are already in place. Examples of mitigation projects underway include chargers for electric taxis and a heat pump and solar panels at the Artrix Centre. As an organisation we appreciate that we can always do more, whilst recognising the resources that we have available within the Council. Key to this has been the carbon literacy training that managers and Councillors in the Council have recently undertaken.

What further actions are we going to take? The Implementation Plan included in this document details what we are going to do over the coming years and how much carbon we expect to save (for direct measures). The Implementation Plan has been produced from discussions with the heads of service covering all areas of Council operations. We are continually improving the level of data that we have on the energy consumption of our buildings from the offices and buildings that we use for the delivery of our services. In terms of adaptation, we must ensure that these buildings are able to maintain a comfortable internal temperature in winter but also to cope with hotter summers and extreme weather events. We have considered our transport fleet, our sports and leisure facilities (managed by Sport and Leisure Management - Everyone Active), our infrastructure and our natural environment and we are looking for carbon saving opportunities. We are also keen that the messages of carbon reduction, resource efficiency and nature conservation are communicated to our residents concisely through a variety of channels.

Waste & Recycling

Background: The 'Environment Act 2021' is a piece of legislation that affects all local authorities in England. The act will require us to deliver collections consistent with the rest of the UK in terms of material range.

The Act also requires us to operate weekly separate food waste collections, preventing food waste from going to landfill or being incinerated. Waste collection and disposal has significant carbon emissions associated with it. These emissions are from the vehicles that transport the waste, and the processing or disposal of the waste once collected.

What are we currently doing? Bromsgrove District Council is a 'collection authority' and the disposal of the waste collected is the responsibility of Worcestershire County Council. Currently the County Council has a Waste Core Strategy that covers the period to 2027, the Council is signed up to the Worcestershire & Herefordshire Joint Municipal Waste Management Strategy (JMWMS). The JMWMS sets out our targets for the reduction and recovery of household waste and runs until 2034.

Our Council website provides information to help residents find their local recycling centre, in addition to guidance on what can and cannot be recycled. We also provide links to inform residents about waste reduction (The Let's Waste Less programme). Teachers can find learning resources for schools on our web page, and we are keen to encourage children to take the message of waste reduction and recycling home to their parents.

What further actions are we going to take? According to the Department for Environment, Food & Rural Affairs (DEFRA) the recycling rates in the district of Bromsgrove are at 41% (2019 / 2020 figures). There is clearly more that we can do to promote waste reduction and recycling through existing channels, and we will do this as part of a wider net zero communications strategy. New legislation will require changes to our waste collection service including the requirement for us separate and collect food waste in the near future and we will investigate the potential to turn this waste into a resource through conversion to gas for energy (Anaerobic Digestion). We are working with the 5 other district Councils and the County Council through the Worcestershire Waste Partnership on how all the changes required by the Environment Act can be implemented.

Action Plan – measures with quantified savings.

Measure	Estimated annual saving in tonnes CO_2	Service area	Target Completion Date / Review Date	Co- benefits	Comment
Assess low carbon fleet fuel options	349	Environmental Services	Review Spring 2023, completion of fuel switch 2040	Contribution to net zero target. Less reliance on imported fuel.	Vegetable oil as a replacement for diesel will be a transitional measure providing a pathway to other fuels such as hydrogen / biomethane or electricity. Use of the EST fleet review data / Midlands Net Zero Hub electrification of council depots guide will assist with this measure. All options assessed will require a report to Cabinet regarding options and costs.
Support Bromsgrove District Housing Trust to apply for funding to improve Efficiency of housing stock	50 n/a as accrues to wider area	Community & Housing Services	Ongoing as new funded schemes come online	Important positive health outcomes for residents, enhanced health and well-being, reduction in fuel poverty	Successful grant applications required to maximise carbon savings for this project. The carbon saving figure is estimated at 0.5 tonnes per property for 100 properties.

Measure	Estimated annual saving in tonnes CO_2	Service area	Target Completion Date / Review Date	Co- benefits	Comment
Set up a rolling programme of works to improve energy efficiency / renewable generation in the buildings with the highest consumption	48	Legal, Democratic & Property Services	Ongoing	Reduction in running costs and contribution to net zero target.	Successful grant applications required to maximise carbon savings. Estimate based on 5 buildings saving a minimum of 20%
Seek commercial partners to build out the Bromsgrove District Heat Network	100	Community & Housing Services	Meetings to be held with prospective investors by Aug 2024	Reduction in running costs and contribution to net zero target - Approximately 80% carbon savings for the buildings connected.	The carbon savings (over 1,000 tonnes) would accrue to the geographical area of Bromsgrove but not to the total for Council operations - Unless Council owned / delivery partner owned buildings are connected hence the low carbon saving figure. Midlands Net Zero Hub to assist with the Green Heat Network Fund meeting.

Measure	Estimated annual saving in tonnes CO_2	Service area	Target Completion Date / Review Date	Co- benefits	Comment
Apply for funding for Parkside Building energy efficiency / generation measures	15	Legal, Democratic & Property Services	Ongoing	Reduction in running costs and contribution to net zero target	Options could include solar panels and connection to a heat network.
Support 'Everyone Active' to reduce energy consumption at the leisure centre & include in funding bids	15	Legal, Democratic & Property Services	Ongoing	Reduction in running costs and contribution to net zero target helps ensure the continued operation of the facility	The next window for Salix funding opens in September, walk around energy assessment already conducted by Midlands Net Zero Hub
Energy audit of server rooms to enable energy saving practices	2	Legal, Democratic & Property Services	To be completed by Dec 2024	Reduced running costs for the Council in relation to IT	Assistance available through Midlands Net Zero Hub.

Measure	Estimated annual saving in tonnes CO_2	Service area	Target Completion Date / Review Date	Co- benefits	Comment
Reduce staff travel and make further use of video conferencing.	0.5	All service areas	Ongoing	Reduce payments for staff travel and unproductive travelling time	This measure fits in with the Council's desire to further adopt agile working
Cut the Council's paper waste by offering papers electronically	2.5	All service areas	Review by Spring 2024	Will save more money than it costs. Should be relatively easy to implement.	This is a measure that many other councils have implemented successfully
Implement Recommendations of the 2020 EST report for the 'grey fleet' and include Travel plans across all service areas	36	Transformation & Organisational Development Service /All Service areas.	2025 to review progress.	Improvements in local air quality & savings of £34k quoted in the EST report.	Travel plans are a low cost way of reducing emissions associated with staff travel. This measure will pre-empt the Government's ban on the sale of petrol & diesel vehicles. Ultimately one or more 'electric pool cars' could be the aim for staff

Grid decarb	179
total savings from plan	568
Target	818
Remainder	71

* Grid electricity to be net zero by 2035 - electricity use from our service delivery partners

Action Plan – measures without quantified savings

Measure	Estimated annual saving in tonnes CO_2	Service area	Target Completion Date / Review Date	Co- benefits	Comment
Assess the viability of Council Car Parks and other sites for EV chargers & Solar Canopies. Continue to work with Worcestershire County Council on a standardised approach to EV charger facilities.	0	EV Project Working Group	Projects to be aligned with funding deadlines where possible	Air Quality & Health and Well-being benefits accrue to the wider area	It is useful to focus on smaller capacity chargers working on the principle that you can replace the power that was used to travel to a venue during the time of your stay. Savings can be calculated when sizes of chargers and locations are known. Use of solar canopies will depend on a business case being made for each site
Work in partnership with Worcestershire County Council to manage verges and other Council owned parks and open spaces for nature	0	Environmental Services / Planning, Regeneration and Leisure Services	Ongoing	Benefits for nature, insects, and pollinators, can act as wildlife corridors	Pilot scheme in progress. Can be one of a suite of schemes to help address the ecological emergency. Will require a report to Cabinet regarding areas and costs.

Measure	Estimated annual saving in tonnes CO_2	Service area	Target Completion Date / Review Date	Co- benefits	Comment
Eliminate petrol powered tools (chainsaws, etc)	0	Environmental Services	Reviewed annually	Better working environment, less noise.	Legislation may bring the deadline forwards as petrol and diesel is banned in other areas.
Continue to evaluate green tariffs and local energy purchase agreements	0	Finance and Customer Services / All services	ongoing	Green tariffs can assist when all other measures have been explored	Green tariffs can assist when all other measures have been explored. Normally green tariffs are higher than standard ones to there is a trade-off between capital and revenue costs.

Measure	Estimated annual saving in tonnes CO_2	Service area	Target Completion Date / Review Date	Co- benefits	Comment
Use of carbon saving metrics as well as cost benefit ratios on a project by project basis, use of treasury green book to calculate co-benefits	0	Finance and Customer Services	ongoing	Helps the Council to put a value on carbon saving, and assists with the monitoring of this implementation plan	Good practice examples from other local authorities to be shared.
Create measures in the performance dashboard for carbon saving as a result of streamlining operations.	0	Transformation and Organisational Development	To be completed by April 2024	Helps the Council to put a value on carbon saving, and assists with the monitoring of this implementation plan	Accurate data assists in the delivery and monitoring of this plan.

Measure	Estimated annual saving in tonnes CO_2	Service area	Target Completion Date / Review Date	Co- benefits	Comment
Moving more IT capacity to cloud based servers	0	Transformation and Organisational Development Service	Review annually.	Reduced running costs for the Council in relation to IT	It should be ensured that cloud servers are using low carbon power sources in order for the carbon saving to be claimed.
Reduce staff travel by making further use of video conferencing.	0	Transformation and Organisational Development Service	Omgoing	Reduce the need for customers to travel to speak to Council specialists about services.	Ultimately one or more electric 'pool cars' could be the aim for staff use if travel is necessary.

Measure	Estimated annual saving in tonnes CO_2	Service area	Target Completion Date / Review Date	Co- benefits	Comment
Include questions on Carbon to evaluate tenders for services during the procurement process	0	Legal, Democratic and Property Services	To be completed by Dec 2024.	Helps the Council to better understand emissions that are not directly in its control.	This is the start of the Council's journey to understand 'scope three' emissions (emissions other than those directly from fuel and power).
Mapping exercise to link forthcoming Leisure and Cultural Strategy with this Strategy	0	Planning, Regeneration and Leisure Services	To be confirmed when the Open Spaces Strategy is complete.	Better health and well-being outcomes for residents through improved access to open spaces / opportunities to engage with the natural environment.	This measure will highlight areas where the ecological emergency can be addressed too. Opportunities for funding should be explored with Worcestershire County Council, such as the 'Natural Networks' scheme.
Review Local Plan where there is particular reference to renewables / provision for renewables in the future or heat networks	0	Planning, Regeneration and Leisure Services	To coincide with Local Plan review dates.	Ensures that Local Plan is in line with the other districts to avoid inconsistency in requirements for low and zero carbon technologies.	Good opportunities for learning and sharing best practice with the other districts of Worcestershire and beyond.

Bromsgrove District Council

DRAFT Air Quality Action Plan

In fulfilment of Part IV of the Environment Act 1995

Local Air Quality Management

2025 - 2030

Bromsgrove District Council

Information	Bromsgrove District Council Details
Local Authority Officer	Christopher Poole
Department	Technical Pollution Team
Address	Bromsgrove House Finepoint Way Kidderminster DY11 7WF
Telephone	01905 822799
E-mail	enquiries@worcsregservices.gov.uk
Report Reference Number	Draft BDC AQAP 2025-30
Date	September 2024

Executive Summary

This Air Quality Action Plan (AQAP) has been produced as part of our statutory duties required by the Local Air Quality Management (LAQM) framework. It outlines the action we will take to improve air quality in the action the Council will take to improve air quality in the Bromsgrove District between 2025 and 2030.

Under the LAQM framework, an action plan is required to improve Air Quality Management Area(s) within their authority boundary.

Currently, there are three Air Quality Management Areas (AQMAs) declared within the Bromsgrove District, due to exceeding the annual objective for nitrogen dioxide (NO_2). The AQMAs are:

- Worcester Road, AQMA declared 24th October 2011
- Redditch Road, AQMA declared 17th February 2010
- Lickey End, AQMA declared 26th July 2001

Monitoring of local air pollution carried out across the Bromsgrove District indicate concentrations of nitrogen dioxide have generally decreased over the last 25 years, in common with national trends.

However, current trend analysis has been complicated in recent years due to low bias adjustment factors in 2019, and lockdowns and restrictions affecting travel patterns and behaviours associated with the COVID-19 pandemic in 2020-21.

LAQM Technical Guidance (LAQM.TG22) advises local authorities should only consider revocation of AQMAs following three consecutive years of annual mean NO_2 concentrations being lower than 36µg/m^3 (i.e. within 10% of the annual mean NO_2 objective) due to the inherent uncertainty associated with diffusion tube monitoring.

The last exceedance of NO_2 in Worcester Road AQMA was recorded in 2018 but measured concentrations were within 10% of the annual objective in 3 of the last 5 years (the other 2 years, 2020-21, being impacted by the COVID-19 pandemic).

Within the Redditch Road AQMA the last exceedance of NO_2 was recorded in 2016. The Lickey End AQMA last exceedance of NO_2 at relevant exposure, was recorded in 2014. Due to the number of years they have not exceeded the annual objective

Bromsgrove District Council will undertake the required work to revoke both of these AQMAs following completion of this AQAP.

Following discussions with the Defra LAQM team in May 2024 it was confirmed an AQAP is required for the Worcester Road, Bromsgrove AQMA only.

The AQMA has been declared due to exceedances of the annual mean objective (40 $\mu g/m^3$) for nitrogen dioxide (NO_2), attributable to road traffic, under terms of the Environment Act 1995. Therefore, measures contained within this plan focus on reducing emissions from sources of nitrogen dioxide pollution. However, it is anticipated that actions taken to reduce NO_2 concentrations across Bromsgrove District will likely result in a linked improvement in other pollutants such as particulate matter.

This Action Plan replaces the Bromsgrove District elements of the previous countywide plan: 'Worcestershire Air Quality Action Plan' (2013).

Significant projects delivered through past actions include:

Real-time Air Quality Monitoring Project – Following a successful bid to the Defra Air Quality Grant Scheme 2022/2023, 3 'low-cost Air Quality Monitors' have been installed in Bromsgrove district between January and May 2024. The monitors are part of an enhanced real-time air quality monitoring network across Worcestershire comprising 27 monitors in total. The monitors will provide real time information on pollutants including NO_2, PM_{10}, and $PM_{2.5}$ for a period of 3 years and is accessible via a public portal.

Ultra-Low Emission Taxi Infrastructure Scheme - The ULEV taxi scheme now has seen the installation of 9 live operational chargers and work is currently on going to deliver an additional 4 chargers across the district. The project is for a duration of 10 years.

Bromsgrove District Council and Redditch Borough Council Provision of Electric Vehicle Charging Infrastructure – About 120 new chargers are set to be placed at 33 locations in the area, after Redditch Borough Council teamed up with Bromsgrove District Council to agree a long-term contract with EV infrastructure provider Zest. A rollout plan is now being developed, and the first of the new chargers are expected to be installed by August 2024.

A38 Bromsgrove Route Enhancement Programme (BREP) Major Scheme - The A38 Bromsgrove Route Enhancement Programme (BREP) aims to provide additional highway capacity and promote walking and cycling as an alternative, through a range of improvements along the whole corridor. Phases 1 and 2 of the scheme have been completed. Phase 3 has moved into the construction stage with a future Phase 4 being planned.

Bromsgrove Transport Strategy This scheme is part of the Strategic Transport Assessment (STA) work which will identify infrastructure and services to support planned development growth. This is part of a collaborative process between Worcestershire County Council and Bromsgrove District Council.

Bromsgrove – Strategic Active Travel Network Investment Programme (Including Catshill, Marlbrook and Lickey End) - Improvements delivered during 2022 include a new active travel link from Harvington Road to Charford Road and access to South Bromsgrove High School with a signal-controlled crossing on Charford Road and New Road.

Air pollution is associated with a number of adverse health impacts. It is recognised as a contributing factor in the onset of heart disease and cancer. Additionally, air pollution particularly affects the most vulnerable in society: children and older people, and those with heart and lung conditions. There is also often a strong correlation with equalities issues, because areas with poor air quality are also often the less affluent areas[1,2].

In 2018, Public Health England (PHE) estimated that the total cost to the NHS and social care due to NO_2 for where there is robust evidence for an association, is estimated to be £60.8 million by 2025, and £230 million by 2035. This increases to

[1] Environmental equity, air quality, socioeconomic status and respiratory health, 2010

[2] Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006

£2.7billion and £9.2billion respectively when diseases with less robust evidence are included[3].

Vehicles are the largest contributor to NO_2 pollution at local roadsides, contributing 80% of the total (on average). This means higher levels of NO_2 are typically focused in high traffic areas within urban centres (such as Bromsgrove). Targeted local action, in addition to a national strategy, is therefore a key part of the solution to tackling NO_2 levels in the UK[4].

Bromsgrove District Council is committed to reducing the exposure of people in Bromsgrove to poor air quality in order to improve health.

Bromsgrove District Council, in collaboration with air quality partner(s) Worcestershire County Council (WCC), have developed actions that can be considered under eight broad topics:

- Alternatives to private vehicle use
- Policy guidance and development control
- Promoting low emission transport
- Promoting travel alternatives
- Public information
- Transport planning and infrastructure
- Traffic management
- Vehicle fleet efficiency

Bromsgrove District Council's priorities are:

- Priority 1 - Reducing Emissions from Transport
- Priority 2 - Public Health and Well-being

[3] Estimation of costs to the NHS and social care due to the health impacts of air pollution: summary report, 2018

[4] UK plan for tackling roadside nitrogen dioxide concentrations, 2017

- Priority 3 – Sustainable Travel and Transport
- Priority 4 – Planning for Future Development

Proposed actions are:

- Installation of public Electric Vehicle (EV) charging points
- Provision of Local Electric Vehicle Infrastructure (LEVI) for residential off-street parking
- Developing the Worcestershire EV Charging Strategy to support LEVI
- Improvements to the local bus fleet and services
- Funding of a Behavioural Change Officer post
- Encouraging awareness of air quality via public access to real time monitoring data
- Air quality improvements from New Development
- Developing and implementation of a Local Cycling and Walking Infrastructure Plan (LCWIP)
- Raising awareness of air pollution and positive actions through annual events
- Formation of a countywide Air Quality Strategy Communications Plan
- Encouraging awareness and behavioural change interventions linked to focussed real time monitoring data
- Promotion of sustainable travel choices
- Implementation of the A38 Bromsgrove Route Enhancement Programme (BREP) Phase 3 - active travel and bus infrastructure enhancements
- Encourage and support sustainable modes of transport to schools and ModeSHIFT star accreditation
- Increase availability of Demand Response Travel service
- Upgrade the Local Authority's Refuse Collection Vehicles (RCV) fleet
- Revitalising an ECO Driving Training Scheme for BDC fleet drivers

In this AQAP Bromsgrove District Council outline the plan to effectively tackle air quality issues within the council's control. However, it is recognised that there are a large number of air quality policy areas that are outside of the local authority's (LA) influence (such as vehicle emissions standards agreed in Europe), but for which the LA may have useful evidence, and so the council will continue to work with regional and central government on policies and issues beyond Bromsgrove District Council's direct influence.

Responsibilities and Commitment

This AQAP has been prepared by Worcestershire Regulatory Services (WRS) for Bromsgrove District Council. WRS is a shared service formed from the Environmental Health and Licensing departments of the six Worcestershire District Councils.

This AQAP was prepared with the support and agreement of the following officers and departments:

- Judith Willis (Chair), Head of Community & Housing Services, Bromsgrove District Council
- Emily Barker, Head of Planning and Transport Planning, (Directorate of Economy and Infrastructure), Worcestershire County Council
- Adrian Allman, Technical Pollution (Principal Officer), Worcestershire Regulatory Services
- Alison Grimmett, Principal Planning Officer, Bromsgrove District Council
- Benjamin Agbasi, Sustainability and Property Manager, Worcestershire Acute Hospitals NHS Trust
- Heydi Horton, Technical Services (Air Quality Behavioural Change), Worcestershire Regulatory Services
- Mark Cox, Technical Services (Manager), Worcestershire Regulatory Services
- Mark Kelly, Principal Transport Planner, Worcestershire County Council
- Matthew Austin, Environmental Services Manager, Bromsgrove District Council

- Matthew Eccles, Climate Change Manager, Bromsgrove District Council
- Mike Dunphy, Strategic Planning and Conservation Manager, Bromsgrove District Council
- Molly Hanks, Technical Pollution (Technical Officer), Worcestershire Regulatory Services
- Natasha Friend, Place Planning Team (Principal Planner), Worcestershire County Council
- Rachel Cockayne, Public Health (Practitioner), Worcestershire County Council
- Sam Robins, Planning Officer, Bromsgrove District Council
- Chris Poole, Technical Pollution (Specialist Lead Officer - Air Quality), Worcestershire Regulatory Services

This AQAP has been approved by:

- Bromsgrove District Council Cabinet

This AQAP <has/has not> been signed off by a Director of Public Health.

This AQAP will be subject to an annual review and appraisal of progress. Progress each year will be reported in the Annual Status Reports (ASRs) produced by Bromsgrove District Council, as part of our statutory Local Air Quality Management duties.

If you have any comments on this AQAP please send them to Technical Pollution, Worcestershire Regulatory Services at:

Bromsgrove House
Finepoint Way
Kidderminster
DY11 7WF

T: 01905 822799

E: enquiries@worcsregservices.gov.uk

Table of Contents

List of Tables

List of Figures

1 Introduction

This report outlines the actions that Bromsgrove District Council along with air quality partners, Worcestershire County Council, will deliver between 2025 and 2030 to reduce concentrations of air pollutants and exposure to air pollution; thereby positively impacting on the health and quality of life of residents and visitors to the Bromsgrove District.

It has been developed in recognition of the legal requirement on the local authority to work towards Air Quality Strategy (AQS) objectives under Part IV of the Environment Act 1995 and relevant regulations made under that part and to meet the requirements of the Local Air Quality Management (LAQM) statutory process.

This Plan will be reviewed every five years at the latest and progress on measures set out within this Plan will be reported on annually within Bromsgrove District Council's Annual Status Report (ASR) on air quality.

The aims and objectives of the plan are to:

- Introduce measures to reduce measured concentrations of nitrogen dioxide (NO_2) to achieve compliance with national air quality objectives (AQO) (target <10%AQO in line with guidance and Defra LAQM team advice)
- Introduce measures to address sources of NO_2 emissions identified in source apportionment work.
- Raise awareness of impacts of air pollution and encourage behavioural change to improve the health and well-being of Bromsgrove District residents and the local environment.
- Meet the statutory requirements of the LAQM regime and the Environment Act 1995.

2 Summary of Current Air Quality in Bromsgrove District

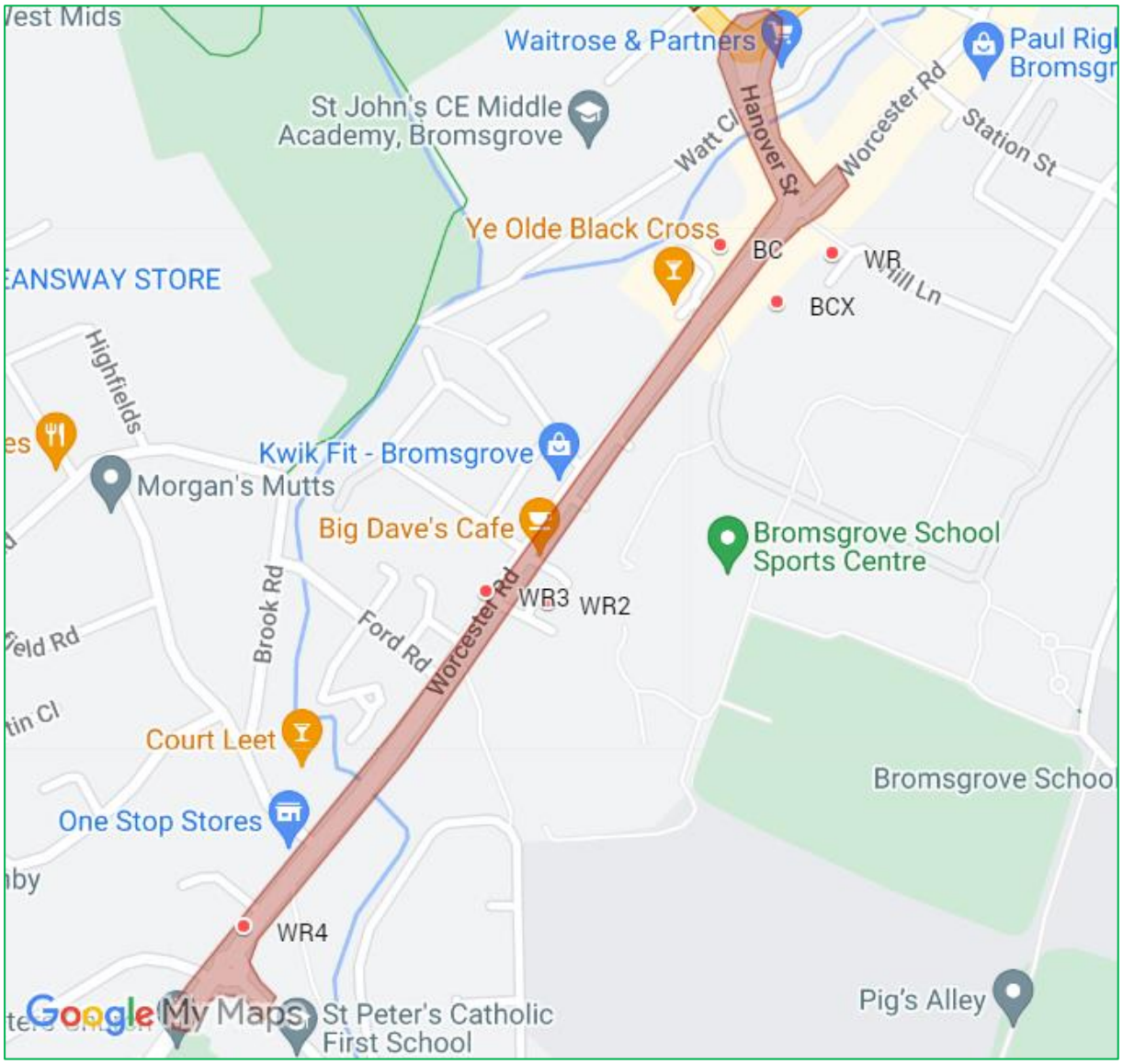
Review and assessment has established air quality over the majority of Bromsgrove District is generally good but there are a number of areas within the district that have elevated levels of nitrogen dioxide (NO_2) due to road traffic.

Currently, there are three Air Quality Management Areas (AQMAs) declared within the Bromsgrove District, due to exceeding the annual objective for nitrogen dioxide (NO_2). The AQMAs are:

- Worcester Road, AQMA declared 24th October 2011
- Redditch Road, AQMA declared 17th February 2010
- Lickey End, AQMA declared 26th July 2001

Further information on monitoring and assessment of air quality, and Air Quality Management Areas within Bromsgrove District are detailed within the latest Annual Status Report.

Figure 2.1 Map of Worcester Road, Bromsgrove AQMA and Monitoring Locations



Like many parts of the UK, poor air quality in the Bromsgrove District is linked to areas with high volumes of traffic, congestion or 'street canyon' landscapes (where height of the building is greater than width of road) or a combination of these factors.

Prior to 2024, monitoring of nitrogen dioxide (NO_2) has been undertaken via a network of passive diffusion tubes across the Bromsgrove District area. In 2023 there were a total of 45 monitoring locations across the Bromsgrove District.

In common with national trends, monitoring indicates concentrations of nitrogen dioxide have generally decreased over the last 25 years. However, current trend analysis has been complicated in recent years due to low bias adjustment factors in

2019, and lockdowns and restrictions affecting travel patterns and behaviours associated with the COVID-19 pandemic in 2020-21.

No exceedances of the annual mean objective for nitrogen dioxide have been recorded in the Bromsgrove District between 2020 and 2023 monitoring years.

The last exceedance of NO_2 in Worcester Road AQMA was recorded in 2018 but measured concentrations were within 10% of the annual objective in 3 of the last 5 years (the other 2 years, 2020-21, being impacted by the COVID-19 pandemic).

Data from County Council indicates traffic had returned to 98% of pre-pandemic levels by the beginning of 2022 and as such the annual concentrations of NO_2 in 2022 and 2023 are higher than observed in 2020 and 2021 due to the COVID-19 pandemic.

The highest concentration of NO_2 recorded across the monitoring network in 2023 was 36.6µg/m^3 at location WR, 14 Hanover Street, Bromsgrove. This concentration is 8.5% below the annual mean objective for NO_2. Results from monitoring locations within the AQMA are shown in Table 2.1 below.

Table 2.1 Monitoring locations within the AQMA between 2018 and 2023

2018 - 2023							
Site No	**Location***	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
WR4	188 Worcester Road	31.2	24.4	19.3	21.4	23.9	23.4
WR2	159 Worcester Road	36.7	31.0	22.4	25.6	27.8	28.4
WR3	138 Worcester Road	30.8	24.6	20.0	21.5	27.4	24.7
BC	Ye Olde Black Cross	**44.0**	38.0	27.7	31.5	37.4	35.4
BCX	16 Worcester Road	**44.0**	36.5	26.3	29.6	32.4	31.5
WR	14 Hanover Street	37.9	31.5	29.4	32.3	36.2	36.6
Objective		**40 µg/m^3**					

Although it has been below the objective for 5 years, the results during the COVID-19 pandemic 2020-2021 are not considered representative of normal trends. Furthermore, LAQM Technical Guidance (LAQM.TG22) advises local authorities should only consider revocation of AQMAs following three consecutive years of annual mean NO_2 concentrations being lower than 36µg/m^3 (i.e. within 10% of the

annual mean NO_2 objective) due to the inherent uncertainty associated with diffusion tube monitoring.

Additionally, it is unclear if some enforced behaviours during the pandemic that led to a decrease in the number of journeys made, such as virtual meetings replacing face to face and an increase in working from home, will continue to have the beneficial impact on reducing concentrations of NO_2 in future years. This is due to insufficient number of years of data post-pandemic available to enable confident trend analysis at this time.

Therefore, the measures outlined in this plan are required to achieve compliance with the LAQM regulatory framework as outlined in the guidance.

As outlined above, the AQMAs have been declared for exceedances of the annual mean AQO for NO_2, and therefore the measures contained within this plan focus on reducing emissions from sources of nitrogen dioxide pollution.

However, LAQM. Policy Guidance 2022 and the Air Quality Strategy 2023 outline the role local authorities have in delivering reductions in particulate matter and contributing to national targets for $PM_{2.5}$. Local authorities are required to report on any local data and actions to improve, or impacting on, $PM_{2.5}$ concentrations within Annual Status Reports. The most recent reports are available to view and download at Annual Status Report.

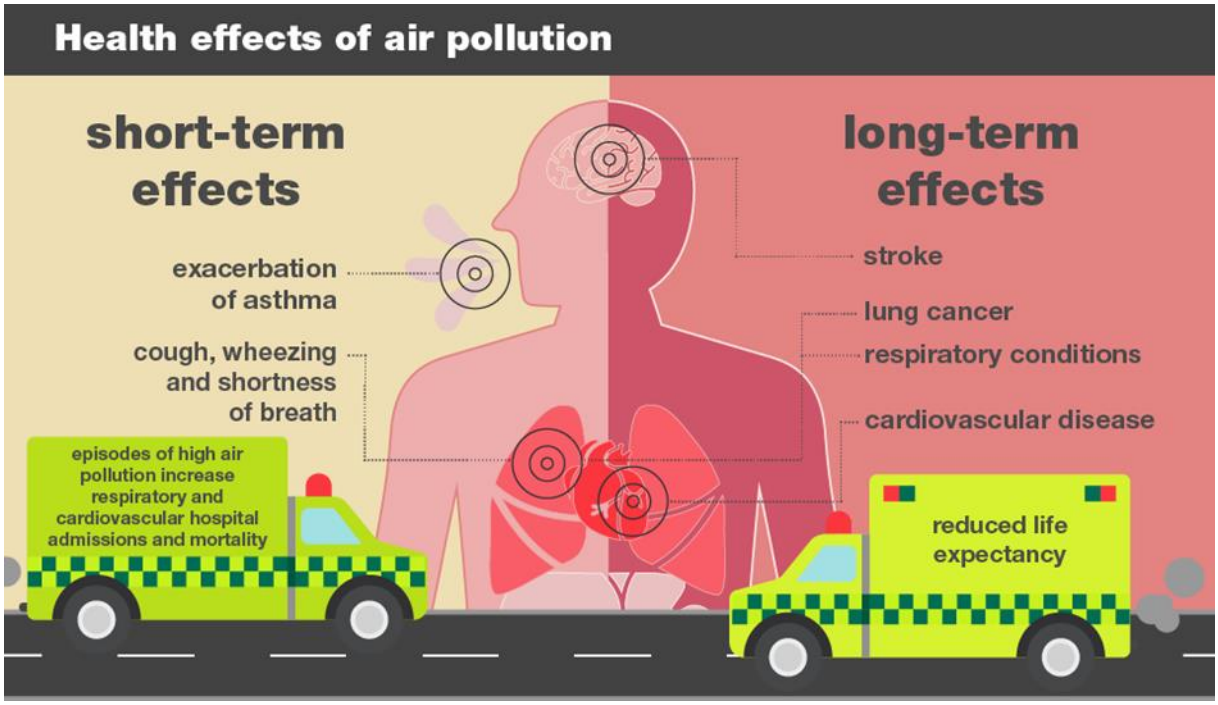
In February 2023, Defra confirmed that WRS had been successful in a bid to the Air Quality Grant Scheme 2022/23 to establish an enhanced real-time air quality monitoring network across Worcestershire. The scheme involves the installation of approximately 26 ‘low-cost Air Quality Monitors’ across the county which measure NO_2, PM_{10}, and $PM_{2.5}$. Three of the monitors were installed between January and May 2024 and are currently operating within the Bromsgrove District. The first calendar year’s annual monitoring results from these monitors will be reported on in the ASR 2025.

3 Bromsgrove District Council's Air Quality Priorities

3.1 Public Health Context

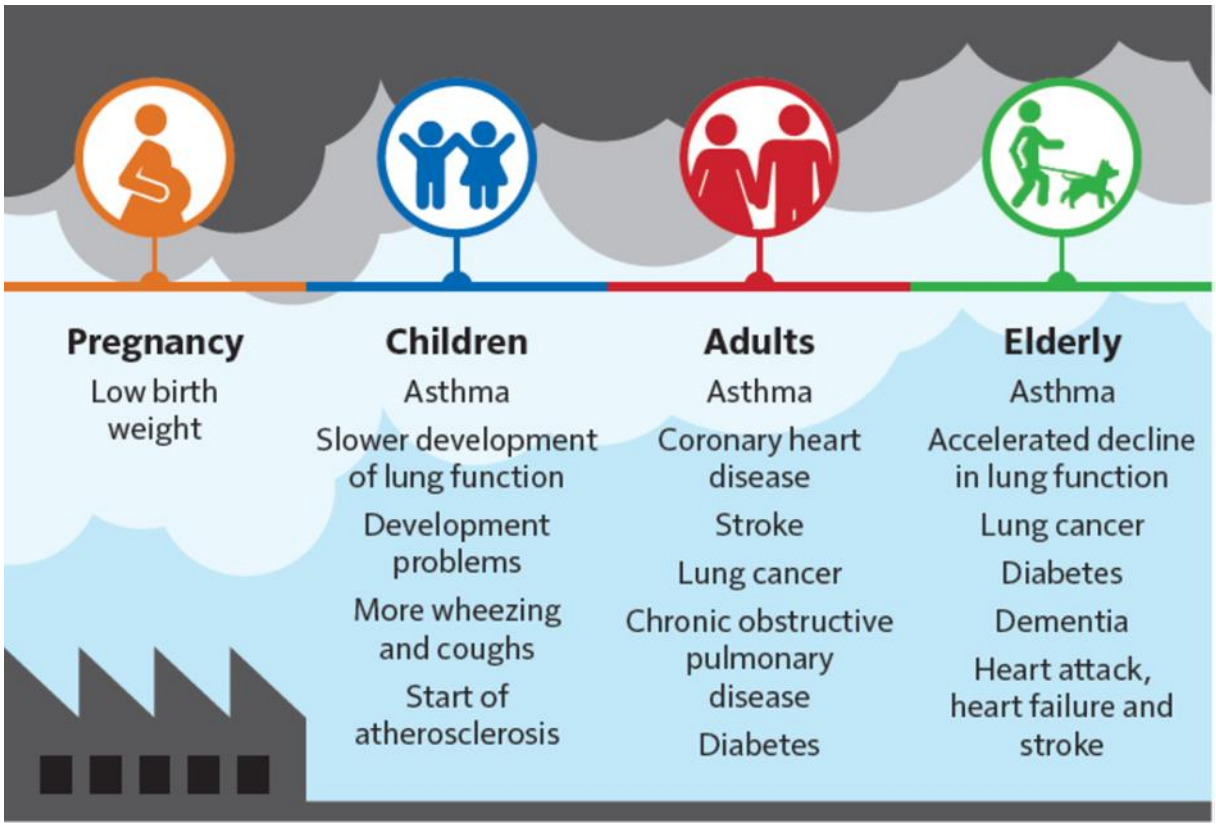
The Chief Medical Officer's (England) Annual report 2022 states 'Air pollution affects people's health throughout their lives, including before birth, in the very young, through to older adults. Exposure to air pollution, indoors and outdoors, over a long period of time, reduces people's life expectancy. There is clear evidence that air pollution contributes to the initiation and development of cardiovascular and respiratory diseases, and can cause lung cancer. The mortality burden of air pollution in England is estimated to be between 26,000 and 38,000 a year, but in addition many people suffer avoidable chronic ill health as a result of it. Improvements in air quality have been associated with improved health outcomes – for example, reductions in air pollution in London have led to reduced childhood asthma hospital admissions.'

Figure 3.1 Health effects of air pollution



Source: Public Health England (14 Nov 2018) Health matters: air pollution - GOV.UK (www.gov.uk)

Figure 3.2 Air pollution effects through lifetime



Source: Chief Medical Officers Report 2022

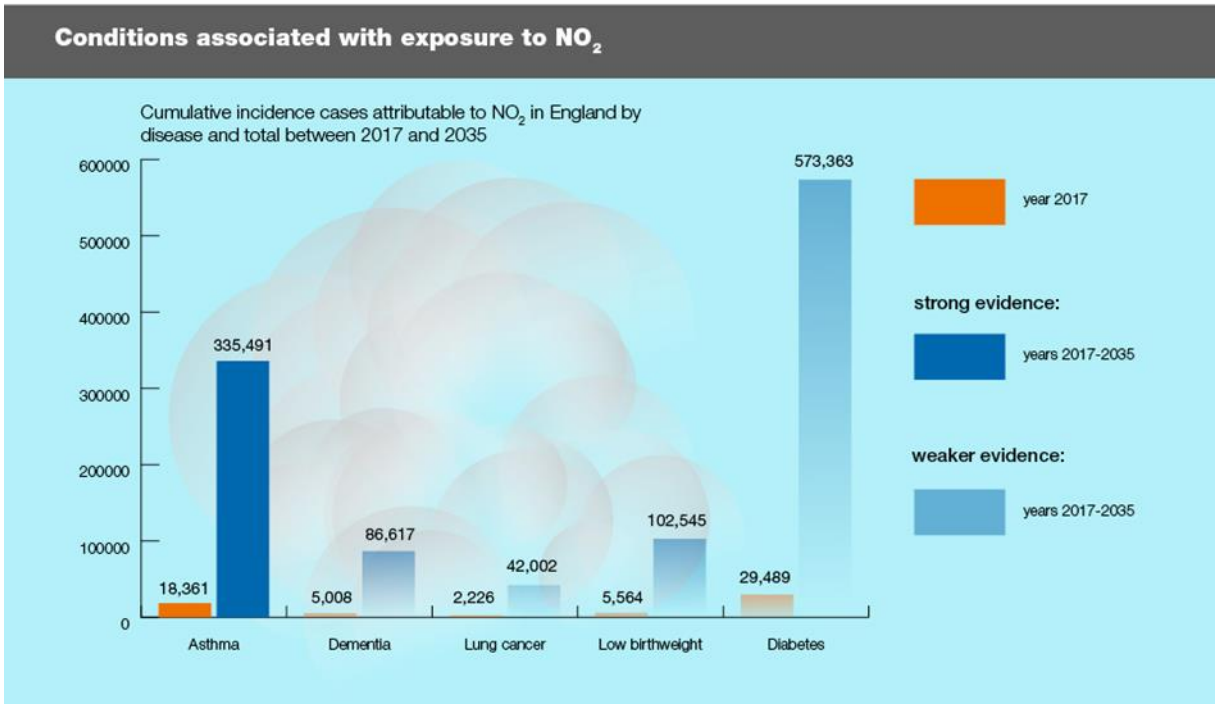
3.1.1 Health Impacts of nitrogen oxides

Nitrogen oxides (NOx) are a group of gases that are predominantly formed during combustion and emitted in the form of nitric oxide (NO). The main sources are power generation, industrial, combustion and road transport. When NO reacts with other gases present in the air, it can form nitrogen dioxide (NO_2), which is harmful to health.

A notable source of NO_2 is road traffic – which has made it difficult to distinguish the effects seen in epidemiological studies for NO_2 from those of particulate matter. However, the evidence associating NO_2 with health effects continues to grow.[5]

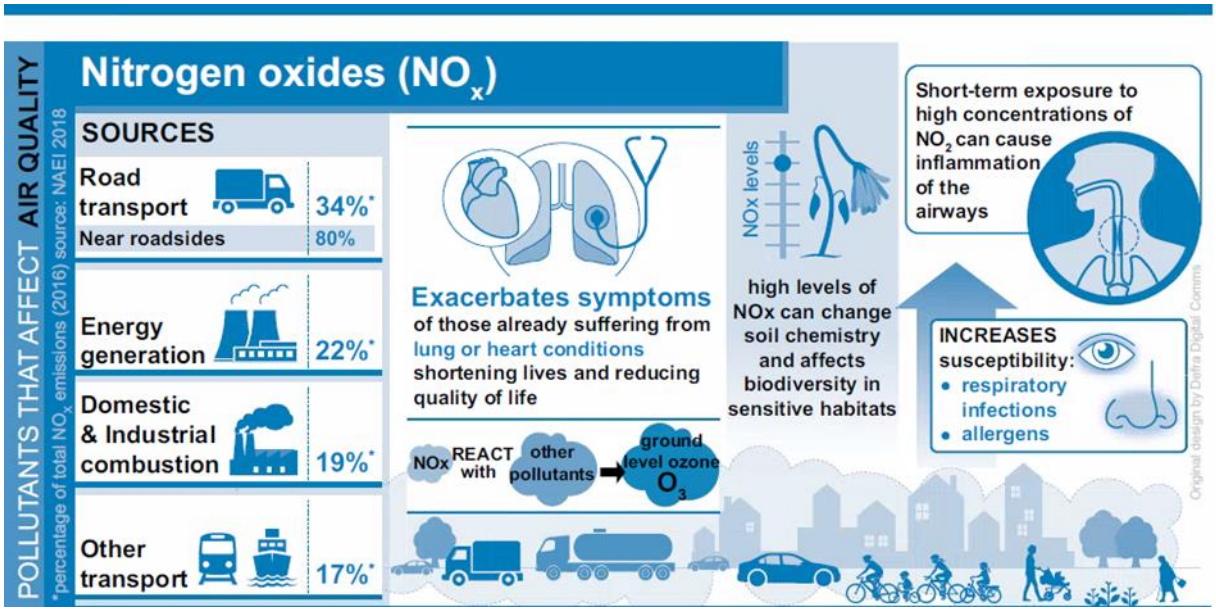
[5] Chief Medical Officer's Annual Report: Air Pollution, 2022

Figure 3.3 Conditions associated with exposure to NO_2



Source: Public Health England (14 Nov 2018) [Health matters: air pollution - GOV.UK (www.gov.uk)]

Figure 3.4 Sources and symptoms of nitrogen oxides



Source: Clean Air Strategy 2019

3.1.1 Economic Impact

In September 2020, CBI Economics produced 'Breathing Life into the UK Economy, a report that quantifies the economic benefit to the UK of meeting WHO Air Quality guidelines. The report commissioned by the Clean Air Fund states:

'Air pollution impacts human health and the productivity of the UK workforce, which in turn impacts the economy. Analysis conducted by CBI Economics in 2020 estimated that clean air in line with the World Health Organisation's (WHO) guidelines could deliver a £1.6bn boost to the UK economy each year. This would be on top of savings to NHS and social care budgets from treating fewer patients with health conditions associated with pollution.

Evidence shows a key link between NO_2 and health outcomes. Reducing NO_2 therefore, has a key role to play in realising this economic potential. NO_2 exposure leads to both short-term and long-term health impacts, exacerbating respiratory conditions such as asthma, possibly increasing the likelihood of lung cancer, stroke, and cardiovascular disease, and has been linked to adverse birth outcomes. This comes at a cost to the healthcare system.'[6]

In 2018, Public Health England (PHE) estimated that the total cost to the NHS and social care due to NO_2 for where there is robust evidence for an association, is estimated to be £60.8 million by 2025, and £230million by 2035. This increases to £2.7billion and £9.2billion respectively when diseases with less robust evidence are included.[3]'

3.2 Planning and Policy Context

The following supporting planning and policy documents contribute toward improvements in air quality in the Bromsgrove District:

Bromsgrove District Local Plan 2011-30: The Local Plan sets out the Council's long-term vision and strategic context for promoting, distributing and delivering

[6] Breathing Life into the UK Economy, 2020

sustainable development and growth within the district until 2030. Policies BDP1, 16, 19, 22 and 25 are relevant to reducing impact of development on local air quality.

Bus Service Improvement Plan (2021): Worcestershire County Council's strategy focusses on road and rail passenger transport services within the county, including Home to School, bus, taxi, Community Transport and other community-based bespoke transport initiatives.

Joint Health and Well-being Strategy (2022 – 2032): The strategy outlines Worcestershire Health and Wellbeing Board's commitment to improving mental health and wellbeing, supporting people to live well in good health for as long as possible, particularly those who have poorer health outcomes.

Local Transport Plan (2018-2030): Worcestershire County Council has responsibility for strategic transport issues in the county and published the fourth Local Transport Plan (LTP4) in 2017.

Technical Guidance Note for Planning: WRS have produced a technical guidance document for Local Planning Authorities, developers and consultants on approach and requirements in respect of environmental protection matters, including air quality, and planning applications.

Streetscape Design Guide: Worcestershire County Council's Streetscapes Design Guide sets out guidance for homeowners, developers and consultants, in formulating designs and making applications for planning permission. It includes standards for parking provision, Electric Vehicle Charging Points and secure cycling facilities.

3.3 Source Apportionment

The AQAP measures presented in this report are targeted towards the predominant sources of emissions within Bromsgrove District Council's area.

A source apportionment exercise has been carried out utilising 2023 monitoring data and commissioned traffic surveys in the same year. Appendix G, provided in the accompanying Technical Appendices, details the source apportionment exercise undertaken.

The percentage source contributions and overall concentrations within the AQMA's identified by the assessment are summarised in Table 3.1 and Figure 3.5 and Figure 3.6 below:

Table 3.1 Annual Mean NO_2 concentrations by source and percentage contributions

Annual Mean Concentration (µg/m³)									
Site ID	**Regional Back-ground[1]**	**Local Back-ground[2]**	**Cars**	**LGVs**	**Taxis**	**HGVs**	**Buses**	**MCs**	**Total**
Worcester Road, Bromsgrove (WR)	8.67	2.32	16.64	3.46	0.30	1.55	3.64	0.02	36.6
% Contribution to Total									
Site ID	**Regional Back-ground**	**Local Back-ground**	**Cars**	**LGVs**	**Taxis**	**HGVs**	**Buses**	**MCs**	**Total**
Worcester Road, Bromsgrove (WR)	23.70%	6.34%	45.48%	9.44%	0.81%	4.24%	9.94%	0.04%	100%

1 Regional background includes emissions from sources not in LA control e.g. Motorways outside of study area, Industrial sources, Domestic properties, Railways, Rural sources, Others

2 Local background includes emissions from sources LA have some influence over e.g. Primary A roads, Minor Roads and Point sources in and outside of study area

Figure 3.5 Annual Mean NO_2 concentrations by source - Worcester Rd, Bromsgrove

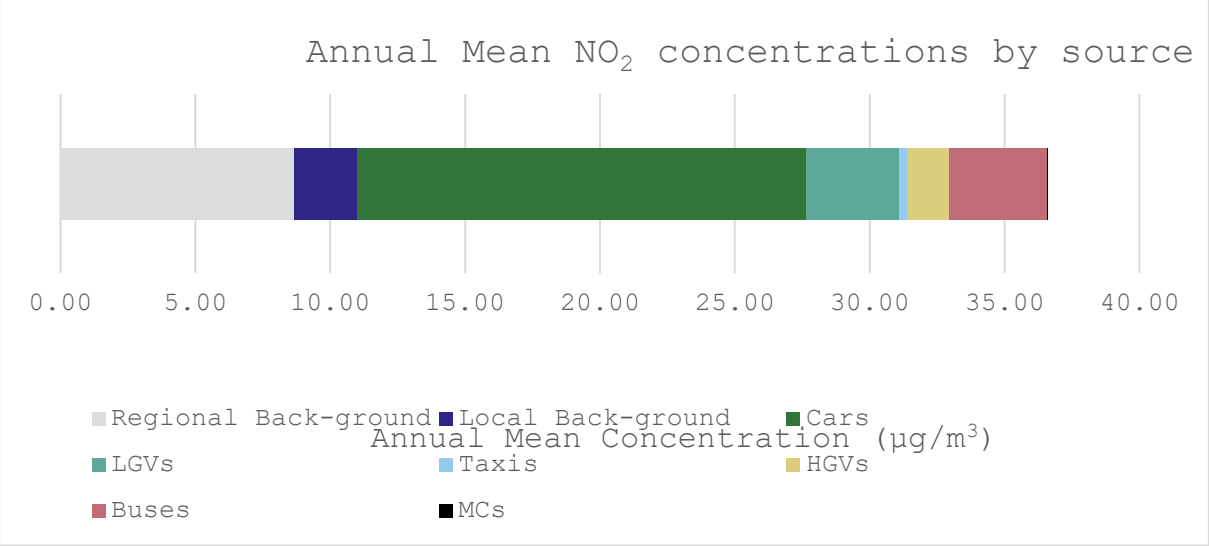
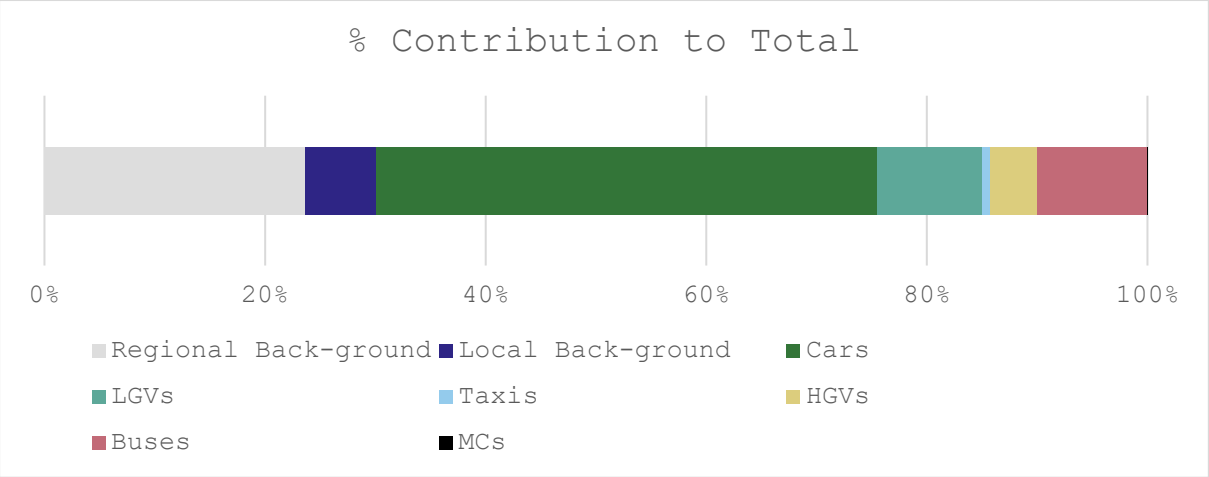


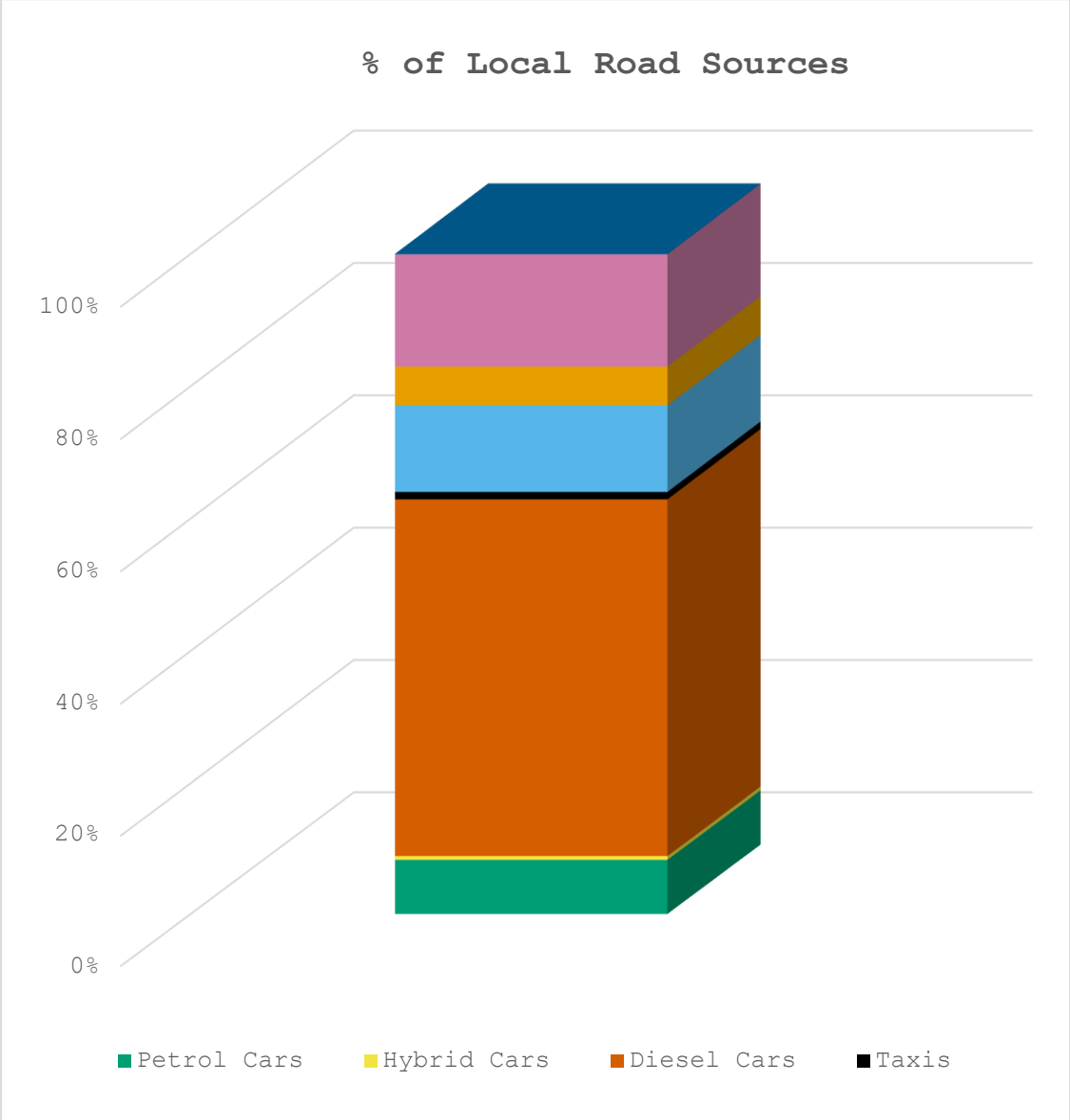
Figure 3.6 Percentage source contributions



The outcome of the source apportionment exercise demonstrates background concentrations contribute a significant proportion of the overall concentration of NO_2 measured within the Worcester Road AQMA, 30.04%. As the local authority is largely unable to influence regional background levels, and local background concentrations are predominately a result of traffic sources on other local roads, it is more useful to consider the source apportionment of the local traffic sources in isolation when developing actions for improving air quality.

Additionally, because of the non-linear relationship between NOx and NO_2 emissions it is more appropriate to consider total NOx (Nitrogen Oxides) emissions of the local traffic contribution for source apportionment, as shown in Figure 3.7 below.

Figure 3.7 Local Road NOx proportions by vehicle type in Worcester Road, Bromsgrove AQMA



Cars are shown to comprise the largest proportion of traffic volume, 86.71% in Worcester Road AQMA contributing to 65% of vehicle source emissions.

Buses comprise just 1.65% of vehicles in Worcester Road AQMA but contribute a much larger proportion,14.21%, of vehicle emissions.

Light Goods Vehicles (LGV) comprise 8.48% of the traffic volumes in Worcester Road AQMA but contribute 13.50% of vehicle emissions.

Heavy Good Vehicles (HGV) make up 1.32% of vehicles in Worcester Road AQMA and contribute 6.07% of vehicle source emissions.

3.4 Required Reduction in Emissions

The source apportionment assessment demonstrates a reduction of 3.05% of emissions within Worcester Road, Bromsgrove AQMA would be necessary across all vehicle types to achieve 10% below the annual average of nitrogen dioxide objective within the AQMAs.

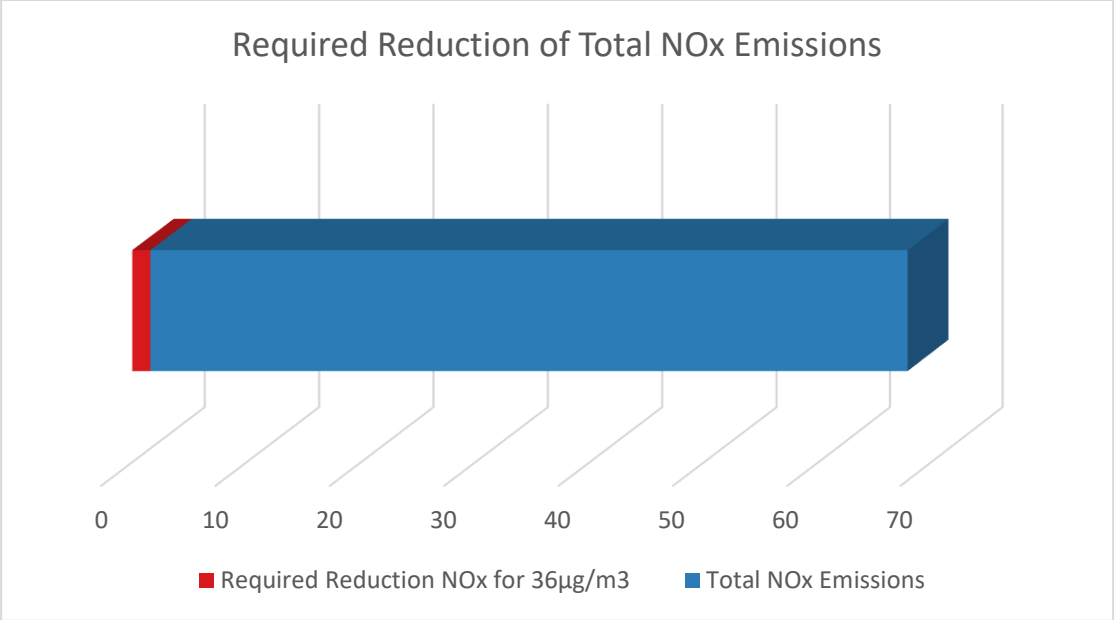
The assessment indicates a 5% reduction in emissions from cars or all vehicle types or a 25% targeted reduction in emissions from LGVs or buses would be sufficient to achieve compliance within the AQMA. Table 3.2 below summarises the reductions required.

Table 3.2 Emission reduction required

Location	Emission Reductions Required to Meet -10% Objective (NO_2)	All Vehicle Reduction to Meet -10% Objective (NOx)	Highest Roadside Contributor	2nd Roadside Contributor	Single Vehicle Reduction to Achieve Objective
Worcester Road, Bromsgrove	1.58	3.05%	Diesel Cars – 57.08%	LGV – 13.81%	Cars 5% or LGVs/Buses 25%

Error! Reference source not found. below shows the required reduction in NOx emissions to achieve compliance and total emissions in the Worcester Road, Bromsgrove AQMA.

Figure 3.8 Required reduction in NOx to achieve compliance in the AQMA



3.5 Key Priorities

Bromsgrove District Council has identified the following priorities for the development and implementation of the air quality action plan*:*

Priority 1 – Reducing Emissions from Transport

Considering the outcomes of the source apportionment assessment a key priority is to implement direct interventions which reduce emissions of NO_2 from vehicles. Measures proposed include improvements to council operated fleets and public transport fleets, and revitalising ECO Driving training for council fleet drivers.

Priority 2 - Public Health and Wellbeing

Air pollution impacts on human health and, therefore, a priority for Bromsgrove District Council are measures raising awareness, increasing community understanding and encouraging behavioural change to reduce individual's exposure to and impact on air quality.

Measures proposed, in conjunction with Public Health at Worcestershire County Council and WRS, include encouraging awareness through publicly available real time monitoring information, developing a communications plan, publicising via events such as annual Clean Air Day, working with local schools and supporting the behavioural change officer post at WRS.

Priority 3 – Sustainable Travel and Transport

Increased uptake of more sustainable travel and transport options has a significant impact on reducing emissions from the local vehicle fleet and improving air quality. Sustainable measures proposed within the action plan include installation of additional public EV charging points and a strategy for future charging, bus service improvements, travel planning and delivery of the Local Cycle Walking and Infrastructure Plan (LCWIP).

Priority 4 - Planning for Future Development

Planning for future development to limit its impact or improve existing air quality and protect the future site occupants through good design or mitigation measures is a key priority. Building on existing local policy and guidance Bromsgrove District Council, in collaboration with local developers, have secured mitigation measures and financial contributions to reduce impacts of significant new developments at Perryfields Road, Whitford Road and the Former Market Hall Site.

Measures include contributions towards junction improvements within the Worcester Road AQMA and connecting network, public transport services and infrastructure, active travel links and the A38 corridor.

4 Development and Implementation of Bromsgrove District Council AQAP

4.1 Consultation and Stakeholder Engagement

This section to be completed for final version following completion of statutory and public consultation.

In developing/updating this AQAP, we have worked with other local authorities, agencies, businesses and the local community to improve local air quality. Schedule 11 of the Environment Act 1995 requires local authorities to consult the bodies listed in Table 4.1. <insert text here, e.g. In addition, we have undertaken the following stakeholder engagement:

- Website
- Articles in local newspaper
- Questionnaires distributed directly to households along major roads
- Etc.>

The response to our consultation stakeholder engagement is given in Appendix A: Response to Consultation.

Table 4.1 – Consultation Undertaken

Consultee	Consultation Undertaken
The Secretary of State	<Yes/No>
The Environment Agency	<Yes/No>
The highways authority	<Yes/No>
All neighbouring local authorities	<Yes/No>
Other public authorities as appropriate, such as Public Health officials	<Yes/No>

Consultee	Consultation Undertaken
Bodies representing local business interests and other organisations as appropriate	<Yes/No>

4.2 Steering Group

A steering group was formed to progress a new AQAP in May 2024.

The group membership comprised officers from Bromsgrove District Council, Worcestershire County Council and WRS from public health, technical pollution (air quality), strategic planning, sustainability, highways and transport disciplines, and also representation from the NHS.

Group members:

- Judith Willis (Chair), Head of Community & Housing Services, Bromsgrove District Council
- Emily Barker, Head of Planning and Transport Planning, (Directorate of Economy and Infrastructure), Worcestershire County Council
- Adrian Allman, Technical Pollution (Principal Officer), Worcestershire Regulatory Services
- Alison Grimmett, Principal Planning Officer, Bromsgrove District Council
- Benjamin Agbasi, Sustainability and Property Manager, Worcestershire Acute Hospitals NHS Trust
- Heydi Horton, Technical Services (Air Quality Behavioural Change), Worcestershire Regulatory Services
- Mark Cox, Technical Services (Manager), Worcestershire Regulatory Services
- Mark Kelly, Principal Transport Planner, Worcestershire County Council
- Matthew Austin, Environmental Services Manager, Bromsgrove District Council
- Matthew Eccles, Climate Change Manager, Bromsgrove District Council

- Mike Dunphy, Strategic Planning and Conservation Manager, Bromsgrove District Council
- Molly Hanks, Technical Pollution (Technical Officer), Worcestershire Regulatory Services
- Natasha Friend, Place Planning Team (Principal Planner), Worcestershire County Council
- Rachel Cockayne, Public Health (Practitioner), Worcestershire County Council
- Sam Robins, Planning Officer, Bromsgrove District Council
- Chris Poole, Technical Pollution (Specialist Lead Officer - Air Quality), Worcestershire Regulatory Services

4.2.1 Steering Group Activity

The Steering Group has overseen the development of this AQAP following the guidelines set out in Chapter 2 of LAQM.TG22 and with reference to best practice examples provided by Defra online and through events.

The Steering Group has met monthly between 21st May to 9th September 2024.

Going forward, it is anticipated the Steering Group will continue to meet less frequently and as part of a countywide focussed group to regularly review progress and impact of air quality improving interventions.

A separate Air Quality Public Health working group was established in 2023 to progress interventions and begin work on a strategy for improving air quality and public health across Worcestershire, following the finalisation of this AQAP and required works in other parts of the County at the end of 2024.

At the time of writing, the future focus, contributors, and responsibilities of the working group is under review with air quality partners. It is anticipated this will be resolved in the coming months and the group will be reformed and continue work in early 2025.

4.2.2 Timeline of works

The timeline for the various stages and delivery of a revised countywide AQAP, and establishment of a new countywide Air Quality Strategy, were set out in the ASR

2023. However, following the introduction of new enforcement policy by Defra in June 2023, it has been necessary to amend the planned framework to prioritise production of separate AQAPs for each district in Worcestershire with an AQMA.

Following discussions with Defra LAQM Team in September 2023, Bromsgrove District Council were granted an extension to the timeline for delivery of a draft AQAP to November 2024 in light of committed priorities elsewhere in the county.

Table 4.2 shows the timeline of works undertaken by the Steering Group and timescale for publication of final plan.

Table 4.2 Timeline of Steering Group work and publication of plan

Timeline	Phase
Sept – Oct 2023	Discussions with Defra LAQM team and establishment of revised timeline for Bromsgrove District Council AQAP submission
May 2024	Steering Group formed, and inaugural workshop held
June – July 2024	Identification, filtering and shortlisting of potential measures and data gathering to enable modelling (quantifying impact) of measures
August 2024	Impact Assessment of focus measures (cost benefit analysis). Complete Table 5.1 - Determine funding sources & KPIs (monitoring and evaluation), delivery timelines.
Sept 2024	Drafting of AQAP report
Oct - Nov 2024	Submission of Draft AQAP to Corporate Management Team, Bromsgrove District Council Cabinet, Director of Public Health for approval and revisions and Defra
Dec 2024 – Feb 2025	2 month public and statutory consultation on Draft AQAP
Feb - Mar 2025	Revisions and submission of Final AQAP for review by Corporate Management Team and approval by Political Committees at Bromsgrove District Council, and DoPH
April 2025	Publication of Final AQAP and submission to Defra
Mar - May 2026	First annual review and update for Annual Status Report

4.2.3 Approach to shortlisting of measures and assessment of impact

All potential measures were subjected to an established measure selection process comprising two stages:

- Stage 1 Qualitative Assessment
- Stage 2 Impact Assessment/Cost Benefit Analysis

The process for both stages has been established with reference to LAQM guidance and review of available best practice AQAPs and is summarised in Figure 4.1 and Figure 4.2 below.

For the Stage 1 Qualitative Assessment the Steering Group member's professional expertise and knowledge were applied to potential measures to determine:

- an anticipated timeline for implementation,
- level of social and political support for measure,
- practicality of implementing within the AQMA,
- feasibility of delivery considering the above 3 categories
- potential reduction in NO_2 emissions

The assessment also included identification of available sources of data to assist quantifying impact of measures progressed to the next stage or the potential for data becoming available within the lifetime of the AQAP. Further detail on the Stage 1 process is provided in Appendix C: Qualitative Assessment of Measures (Shortlisting).

The group also considered two other factors at this stage:

- sources impacted (e.g., cars, vans, buses, HGVs),
- identify potential funding sources or opportunities.

Measures were ranked based utilising a RAG (Red, Amber, Green) scale, and 4 groups of measures were established:

1. **Focus Measures -** quantifiable or non-quantifiable shortlisted measures progressing to Stage 2 – Impact Assessment and shown in Table 5.1 and detailed in Section 5 AQAP Measures.

2. **Potential Future options -** measures with potential to be developed or delivered in future not shortlisted at this time due to timeline, lack of support, information or data, or practicality of delivery or combination of those. Further detail is provided in Appendix D.
3. **Measures not being pursued** - measures identified as non-deliverable due to social or political opposition, cost, lack of funding, practicality of delivery, or no or little AQ impact anticipated within the AQMA, or combination thereof. These are identified in Appendix B.
4. **In place** - actions identified as already being delivered and contributing to air quality improvements at the time, not considered further.

The outcome of the Qualitative Assessment is shown in Appendix D: Outcomes of Stage 1 Shortlisting Process.

Figure 4.1 Stage 1: Qualitative Assessment of Measures

RAG	Timeline for implementation	Support for measure	Practical Application	Deliverability	Anticipated Air Pollutant reduction	Data to quantify impact	Progress to Stage 2 Impact Assessment	Potential to progress to Stage 2 in the future
Green	Within 5 years	Likely Social and political support	Feasible	Yes	Significant	Available	Yes/No (Green/Red)	Potentially Within lifetime of AQAP
Amber	Potentially within 5 years	Potential social and/or political support	Potentially feasible	Potentially	Low to Medium impact or insufficient info to make a determination	Not available at time of draft plan, anticipated within 5 years		Post lifetime of this AQAP, consideration for
Red	Greater than 5 years	Unlikely social and political support	Not feasible	No	Negligible or Negative	Not available or forthcoming in next 5 years		Unlikely to be progressed in the future

Figure 4.2 Stage 2: Impact Assessment

AQ Improvement / Cost		Negligible	small	medium	large	Very large
		1	2	3	4	5
Neutral	8	8	16	24	32	40
Low	7	7	14	21	28	35
Low - Medium	6	6	12	18	24	30
Medium	5	5	10	15	20	25
Medium - High	4	4	8	12	15	20
High	3	3	6	9	12	15
High – Very High	2	2	4	6	8	10
Very High	1	1	2	3	4	5

For the Stage 2 Impact Assessment, a cost benefit analysis was applied to the identified focus measures.

Costs were scored according to the bandings identified below, adopted from LAQM guidance. The amounts for each measure were determined either from known costs, where a measure is currently being implemented, or application of professional experience and knowledge for measures at an earlier stage of development.

A numerical score identified in Figure 4.2, above, corresponding to the banding below was applied to each measure for the overall cost and the cost to local authority of the action taken, to determine an average cost score.

Table 4.3 Description of cost bandings

Cost Bandings	Anticipated overall costs
Neutral	No additional cost or part of existing spend
Low	<£10k
Low - Medium	£10k – £50k
Medium	£50k - £100k
Medium - High	£100k - £500k
High	£500k - £1m
High – Very High	£1m - £10m
Very high	> £10m

The impact of measures were scored according to the bandings below. The bandings were determined from the source apportionment work and identified required reduction in NOx concentrations to achieve compliance within the AQMA.

Table 4.4 Description of Air Quality Impact bandings

AQ Impact	Proportion of Emissions Reduction	Approx equivalent concentration (NOx)
Negligible	<0.2%	<0.15 µg/m^3
Small	0.2 – 1.5%	0.15 – 1 µg/m^3
Medium	1.5 – 6%	1 – 4 µg/m^3
Large	6 - 10%	4 - 7 µg/m^3
Very Large	>10%	>7 µg/m^3

The impact of each measure was determined via modelling where sufficient and appropriate data was available to enable quantification. However, it is recognised, within guidance (LAQM.PG22), that it is easier to quantify some measures more than others. For example, a reduction in emissions can be calculated from improvements in combustion engines such as replacing a Euro Code (EC) IV fleet with EC VI vehicles. Other measures, such as those designed to encourage a change in travel behaviour, are more difficult to quantify as the likely number of removed vehicle journeys is unpredictable.

The approach taken has been to assume a negligible or small impact at best where it has not been possible to quantify the impact of a measure, and the application of professional experience and knowledge to determine which banding is most applicable. Further information on the approach to modelling is outlined within the next section.

An overall score for each measure was determined my multiplying the Cost score average by the Impact Score:

Cost Score Average (Overall cost + Cost to LA) x Impact Score = Overall Score

The measures are then ranked in order of overall score from highest to lowest which is reflected in Table 5.1. A summary of the assessment is provided in Appendix E: Outcomes of Stage 2 Impact Assessment.

4.2.4 Approach to modelling and quantification of measures

For modelling purposes, WRS has used the most recent available Emissions Factor Toolkit (EFT) v12.0.1 to calculate reduction in emissions of NOx (in g/km). This complies with LAQM guidance, and additionally is the approach used within the source apportionment studies.

For each quantifiable measure, WRS has used the EFT to calculate the reduction in emissions of NOx (in g/km) within the AQMA compared with the outcomes of the source apportionment studies. This complies with advice received from LAQM helpdesk operated by Bureau Veritas on behalf of Defra.

The EFT is published by Defra to assist local authorities in carrying out assessments of local air quality as part of LAQM duties under the Environmental Act 1995 as amended by the Environment Act 2021. The EFT allows users to calculate road vehicle pollutant emission rates for NO_x, and other pollutants, for a specified year, road type, vehicle speed and vehicle fleet composition. It utilises COPERT v5.6 NO_x and PM speed-based emissions factors as taken from the European Environmental Agency (EEA) emission calculation tool.

Output from the EFT is provided as total emissions of NOx in g/km (grammes per kilometres) broken down by vehicle type over specified link distance (length of AQMA) and period (year).

It should be noted that model outputs are based upon national fleet assumptions embedded within the Emissions Factor Toolkit (EFT). These may not be wholly representative of the local vehicle fleet composition. Therefore, where local data is available, such as bus fleet data, this has been used to update the corresponding assumptions within the EFT to provide outputs more representative of local fleet emissions.

Additionally, the results of the modelling approach should be considered as indicative only, rather than determined concentration reductions. Furthermore, the EFT does not include spatial impacts of street canyon effects, weather impacts or idling at junctions. Assessment of such impacts requires a more complex model, supporting data and resource which were not available during the production of this AQAP.

Common Modelling Parameters

The proportions of each vehicle type determined from the source apportionment studies for each AQMA has been used as a baseline for each modelling scenario.

A number of modelling scenarios using the latest toolkit (EFT 12.0.1) were ran with amendments to proportions of vehicle types from the source apportionment baseline determined from reductions to vehicle parcs projected by specific measure impacts with consideration for appropriate fleet growth factors in 2029-2030. Inputs and outputs of each modelled scenario are shown in Appendix K: Modelled Measures in the accompanying Technical Appendices document.

The' All Vehicle Type' option was selected for modelling impact of transition to EV, and the measures involving buses were run using 'Detailed Option 2' as required less detail for each vehicle type. All modelled scenarios were run providing outputs in emission rates of NOx (g/km) and additional breakdown by vehicle. Details of all model options are outlined within the EfT v12.0.1 User Guide.

A number of input parameters within the 'All Vehicle Type' option required additional detail determined from local fleet data or research of nationally available projections:

- Split between diesel and EV power trains for Rigid and Arctic HGVs from available DfT road traffic statistics and projections for 2023 – 2029.
- Petrol, Diesel and Low Emission Vehicle (LEV) splits for cars and LGVs were determined from the National EV Insight and Support (NEVIS) and DfT projections.
- Local taxi fleet data from 2023 was used as a baseline to determine proportions of diesel, hybrids and (Battery Electric Vehicles) BEV within fleet.
- Growth factors for 2029 have considered for all vehicle types except buses from NEVIS and DfT projections.

Modelled measures and parameters

Measures supporting Electric Vehicle (EV) uptake: Public EV Charging Points, EV Charging Strategy, Low Emission Vehicle Infrastructure (LEVI) Funding.

Reductions in emissions have been calculated utilising forecast data from NEVIS on EV uptake for car and LGV fleet in Bromsgrove District and Worcestershire.

Calculations have also taken into consideration vehicle growth in these fleets as forecast for 2029 within NEVIS, and from available Department for Transport (DfT) data[7]. The model scenario has been run assuming a Medium uptake of EV from NEVIS within the AQMA.

Bus fleet improvements.

Data was provided by WCC Highways of Diamond and First bus fleets as of June 2024, as the predominant service providers within the Bromsgrove District, which was used to determine a baseline source contribution.

The pre-defined Bus Fleet Euro Code Composition within the EFT was amended to reflect the local Eurocode compositions using the 'Bespoke Euro Fleet' option and model scenario run to determine the baseline as of 2023 for the source apportionment assessment.

The pre-defined Bus Fleet Euro Code Composition within the EFT for 2029 forecast was amended to reflect the projected fleet update to Eurocode VI using the 'Bespoke Euro Fleet' option and model run to determine reduced emissions within each AQMA.

The EFT outcomes for each measure and scenario in the AQMA were compared with the source apportionment emissions to forecast reduced emissions for the purposes of the Stage 2 Impact Assessment.

Local bus service improvements

A 25% increase in bus patronage on pre-pandemic levels has been determined as 0.9% uptake utilising available National Traffic Survey data (see section 5.1.9 for further information). This has been calculated to equate to a 0.57% reduction in car journeys in the AQMA (assuming the 0.9% uptake replaces journeys spread across a mix of modes of transport) has been assumed for modelling purposes.

[7] National Road Traffic Projections, 2022

4.2.5 Predicted Emissions Reduction

The forecast emissions reduction in NOx (g/km) in the AQMA for 2029-30 from all the quantifiable measures has been compared to the source apportionment outcomes and required emission reduction to achieve compliance.

Table 4.5 Predicted and required emissions reduction of NOx compared with total emissions from source apportionment in the AQMA.

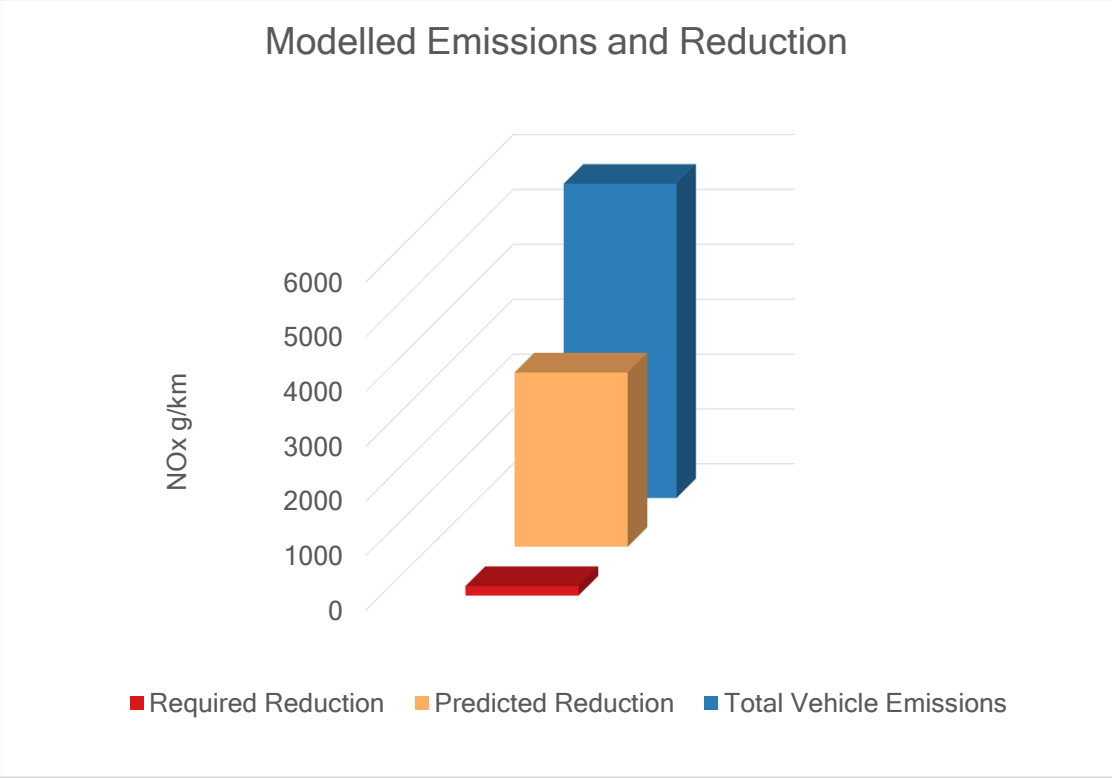
Source Name	All Vehicles Emissions NOx (g/km)[1]	Required Reduction NOx (g/km)[2]	2025 - 30 Modelled Reduction NOx (g/km)[3]	Reduction Achieved
Worcester Road	5729.597744	174.7527312	3186.244224	Yes

[1]All Vehicles Emission NOx (g/km) = Source Apportionment (2023) outputs
[2]Required Reduction NOx (g/km) calculated from Source Apportionment (2023) assessment
[3]Modelled Reduction NOx (g/km) calculated total of quantifiable measures (2029-30)

Further explanation on the modelling process, EFT outputs and modelled measures is provided is section 4.2.4 above. Inputs and outputs of each modelled scenario are shown in **Error! Reference source not found.** in the accompanying Technical Appendices document.

Error! Reference source not found. below shows the predicted modelled emissions reduction achieved (middle column) compared with total emissions within the AQMA determined from the source apportionment study (back) and the required emissions reduction to achieve target compliance of 36µg/m^3 (-10% AQO) (front).

Figure 4.3 Total emissions, predicted and required reduction of NOx emissions in the AQMA



In accordance with advice from LAQM helpdesk consideration has been given to the date at which compliance is expected to be achieved, both with and without the implementation of the AQAP measures

The impact assessment indicates the proposed measures are sufficient to achieve compliance and the target of less than 10% below the current AQO for annual average NO_2 of 40µg/m^3 in Worcester Road, Bromsgrove AQMA within the lifetime of this AQAP (2025-30).

It has not been possible to predict if compliance with the AQO or target of less than 10% below will be achieved without the measures in this AQAP due to the following factors:

- Limited available long term trend data (only 2 full calendar years 2022-23) since traffic levels returned to near pre-pandemic levels;
- Variability in climate – weather has significant impact on concentrations of air pollutants in any given period and varies from season to season, year to year;

- Unpredictable impact of EV uptake without supporting charging infrastructure and the measures contained within this AQAP;
- Unpredictable bus fleet upgrade without Bus Service Improvement Plan and Enhanced Partnership intervention;
- Unpredictable impacts of behavioural change aspects.

Table 2.1 demonstrates the variability in air pollution concentrations and unpredictable nature of air quality trends. The monitoring data shows nitrogen dioxide concentrations have marginally declined between 2019 – 2023 year on year at most monitoring locations within Worcester Road, Bromsgrove AQMA, when removing the pandemic impacted years of 2020-21 from the trend analysis. The exception being Site location WR which has increased by 16% in that time.

5 AQAP Measures

Table 5.1 shows the Bromsgrove District Council AQAP measures. It contains:

- a list of the actions that form part of the plan
- the responsible individual and departments/organisations who will deliver this action
- estimated cost of implementing each action (overall cost and cost to the local authority)
- expected benefit in terms of pollutant emission and/or concentration reduction
- the timescale for implementation
- how progress will be monitored

NB: Please see future ASRs for regular annual updates on implementation of these measures.

The following section provides more detail on the focus measures within this AQAP.

5.1 Focus Measures

5.1.1 Electric Vehicles – general

As part of the Net Zero agenda to reduce carbon emissions government propose to introduce a ban on the sale of new petrol and diesel vehicles in 2035.

The transition of the vehicle fleet from conventional internal combustion engine (ICE) powered vehicles to electric vehicles is predicted to deliver significant reductions in NOx emissions, nationally and locally.

In addition to reduced CO_2 and NOx emissions, the transition to a battery electric vehicle (BEV) fleet will contribute towards reduction in PM emissions from tailpipes and noise generated from road transport.

Local EV projections available from NEVIS have been utilised to model the predicted emissions reduction from the local car and van (LGV) fleet over the next 5 years (2024 – 2029). The NEVIS data predicts the local car fleet will comprise between

15.70% to 24.52% BEV by 2029. BEVs will also comprise 18.25% to 27.72% of the local LGV vehicle parc.

The results of modelling undertaken indicate the emissions reduction forecast from transition to BEV vehicle parc predictions will result in a 35.15% reduction in NOx emissions in Worcester Road, Bromsgrove AQMA by 2030.

This transition to high proportions of BEV within local vehicle parc requires supporting EV charging infrastructure (EVCI) to meet the growing demand.

A 2022 survey by Zap-Map highlighted that whilst 82% of EV drivers (nationally) have access to charging at home, 93% of EV drivers use public charging networks, most commonly motorway service areas and charge-points at supermarkets for opportunity charging. Workplace, public car parks and business sources such as hotels are also opportunity locations for charging. As the access to and reliability of public EVCI grows, the 26% of households in Bromsgrove without a private driveway for the installation of a chargepoint will be more likely to invest in an EV.

Local authority has a role to play in ensuring adequate levels of EVCI are available to support the transition to EV through the provision of charging in public car parks, on street charging or local hubs for those without ability to charge at home, and setting requirements of new residential and commercial development through planning policy.

Three shortlisted measures have been identified that will contribute towards greater provision of EVI and the emissions reduction forecast in the AQMAs:

- Public EV Charging Points (Bromsgrove District Council)
- EV Charging Strategy (Worcestershire County Council)
- Local Electric Vehicle Infrastructure (LEVI) Capital Funding

5.1.2 Public EV Charging Points

Bromsgrove District Council outline their approach and action plan to support EV uptake within the Council's Ultra-Low Emission Vehicles Strategy.

To support the transition of local vehicle parc to BEV, Bromsgrove District Council, in partnership with Redditch Borough Council, are progressing a scheme to create a comprehensive network of EV Chargers across both Local Authority areas. About

120 new chargers are set to be placed at 33 locations in the area, after the partnership councils agreed a long-term contract with EV infrastructure provider Zest.

Zest is backed by the government-sponsored Charging Infrastructure Investment Fund (CIIF) and will invest about £2.1m to provide the new infrastructure for the next 10 to 15 years after winning the contract. Zest will provide, operate, and maintain the chargers.

A rollout plan is now being developed, and the first of the new chargers are expected to be installed by early 2025 including 5 chargepoints in Bromsgrove Town Centre. In this initial phase the contract will mostly add more chargers to more council-owned car parks, while also bringing chargers to the councils' main workplaces.

- Emissions Reduction: 35% (part contribution)
- Sources impacted: Petrol and diesel cars, LGVs
- Cost: £1 million - £10 million
- Funding Sources: Privately funded by contractor and funding partners

5.1.3 Worcestershire EV Charging Strategy

The Local Electric Vehicle Infrastructure (LEVI) Fund supports local transport authorities to plan and procure charging infrastructure (EVCI) solutions primarily for residents without dedicated off-street parking.

LEVI Capability funding has assisted the development of the Worcestershire County Council's Electric Vehicle Charging (EVCI) Strategy to support delivery of LEVI. At the time of writing (September 2024) the draft of the strategy is currently being consulted on with WCC due to adopt and publicise it later in the year. The strategy sets out the approach to the delivery of EVCI across the County over the next 5 years which will be delivered through the LEVI funding.

- Emissions Reduction: 35% (part contribution)
- Sources impacted: Petrol and diesel cars, LGVs
- Cost: £50k - £100K
- Funding Sources: LEVI capability funding

5.1.4 LEVI Capital Funding

Following the publication of the Worcestershire EVCI strategy, LEVI capital funding will enable installation of on street charging to assist with transition to EVs for the 26% of Bromsgrove District households without off-street parking[8].

Capital funding of £3.5m has been allocated to Worcestershire County Council for the delivery of EVCI across the County.

The funding is subject to the successful submission of a three-stage business case and approval from the Office of Zero Emission Vehicles (OZEV).

- Emissions Reduction: 35% (part contribution)
- Sources impacted: Petrol and diesel cars, LGVs
- Cost: £1million - £10million
- Funding Sources: LEVI capital funding

5.1.5 Bus Fleet Improvements

Larger road vehicles, such as buses, contribute disproportionate amounts of NOx emissions compared to their numbers on local roads. Buses comprise 1.65% of vehicles contributing 14.21% of vehicle source emissions in Worcester Road, Bromsgrove AQMA.

Worcestershire County Council will work with bus operators to increase proportion of EC VI (Eurocode six) standard engine vehicles within the local fleet through the Bus Service Improvement Plan (BSIP) and an Enhanced Partnership (EP) agreement which was concluded in November 2023.

As of June 2024, 74% of the bus fleet operating within the AQMA are currently EC VI with EC V equipped with EGR (Exhaust gas recirculation) making up 20% and the remaining 5% consisting of EC IV buses or older.

[8] Worcestershire County Council Electric Vehicle Charging Infrastructure (EVCI) Strategy *Draft* (2024)

At present there are currently no plans to convert the fleet serving Bromsgrove to electric. Application to future Zero Emission Bus Regional Areas (ZEBRA) funding rounds maybe considered in the future.

Therefore, it is likely improvements to local fleet will occur via cascading of EC VI buses from other parts of the Midlands.

A projection for the 2030 fleet of 100% EC VI has been assumed for modelling purposes based on the ambition of the Worcestershire County Council BSIP to achieve all EC VI across the County by 2025.

The result of modelling undertaken indicates the emissions reduction in NOx forecast of 8.79% in Worcester Road, Bromsgrove AQMA by 2030.

Additionally, this measure will contribute towards a reduction in $PM_{2.5}$ and carbon emissions generated from road transport.

- Emissions Reduction: 8.79%
- Sources impacted: Buses
- Cost: £1million - £10million
- Funding Sources: Not yet identified

5.1.6 Behavioural Change Officer Post (Countywide Air Quality Strategy)

Actions to encourage behavioural change can deliver future and continuing benefits for air quality, carbon reduction and public health. WRS has funded a Behavioural Change Officer (BCO) post for up to 3 years from March 2024. The post is funded from s106 contributions from new planning developments to provide air quality improvements.

The BCO role will focus on working with schools and other community settings across the county, providing information and advice about local air quality, and encouraging sustainable behaviours, such as switching from short car journeys to active travel modes of transport. The BCO, working in close partnership with WCC Public Health, will utilise monitoring and survey data to inform future work programmes.

As a first step WCC Public Health, in collaboration with WRS, undertook an Air Quality Behaviour Change survey between February and May 2024 to establish

baseline behavioural patterns and understanding of air quality. A summary of the key findings from the survey are provided in Appendix F: Air Quality Survey Summary.

In addition to contributing towards this AQAP for the Bromsgrove District, this work also forms part of the evolving Air Quality Strategy for Worcestershire. The vision for this strategy is to improve the health and wellbeing of the local population and provide air quality improvements across the county. The strategy will contribute towards compliance with national air quality standards and policy but extend beyond the specific focus of district AQAP's. The strategy will be a continuing area of work undertaken by collaboration between the Worcestershire district authorities, WRS and Public Health. At this time the strategy is at an early stage and will be developed further work once priority work, such as this AQAP, have been completed in 2024-2025.

This measure aligns with other Behavioural Change encouraging focus measures, specifically those progressed as part of the developing Air Quality Strategy for Worcestershire, Travel Choices and Sustainable Modes of Travel to School .

It has not been possible to quantify impacts of this measure, at this time, due to the early stage of development and the unpredictable outcomes of behaviour change actions. It is considered the measure has the potential to deliver a small, <1.5%, emissions reduction by 2030.

Additionally, this measure will contribute towards a reduction in $PM_{2.5}$ and carbon emissions and noise generated from road transport, reduce congestion, improve residents' health through increased activity and encourage long term sustainable and healthy travel behaviours within early age groups.

- Emissions Reduction: <1.5%
- Sources impacted: Petrol and diesel cars
- Cost: £100k - £500k
- Funding Sources: s106 funds

5.1.7 Encouraging Awareness via Public Portal of Real Time Monitoring Data (Countywide Air Quality Strategy)

In February 2023, WRS were successful in a bid to the Defra Air Quality Grant Scheme 2022/23 to establish an enhanced real-time air quality monitoring network across Worcestershire. The scope of the bid was to establish a real-time air quality monitoring network across the main areas of air quality concern in Worcestershire for purposes of providing enhanced monitoring data on a range of pollutants. Additionally, the proposal included informing the public and vulnerable groups of the status of air pollution in real time to encourage behaviour change.

The scheme involves the installation of 'low-cost Air Quality Monitors' across the county which measure NO_2, PM_{10}, and $PM_{2.5}$. Three of the twenty-six monitors across the county were installed in the Bromsgrove District between January and May 2024 and are funded to operate for 3 years. The sensors, known as 'Zephyrs' are provided, operated and serviced by Earthsense who also provide data access.

Earthsense and WRS have designed a publicly accessible portal to the real time monitoring data which launched in May 2024.

In addition to contributing towards this AQAP for Bromsgrove District Council, this work also forms part of the evolving Air Quality Strategy for Worcestershire – refer above for further information.

This measure aligns with other Behavioural Change encouraging focus measures, specifically those progressed as part of the developing Air Quality Strategy for Worcestershire, Travel Choices and Sustainable Modes of Travel to School .

It has not been possible to quantify impacts of this measure, at this time, due to the early stage of development and the unpredictable outcomes of behaviour change actions. It is considered the measure has the potential to deliver a small, <1.5%, emissions reduction by 2030.

Additionally, this measure will contribute towards a reduction in $PM_{2.5}$ and carbon emissions and noise generated from road transport, reduce congestion, improve residents' health through increased activity and encourage long term sustainable and healthy travel behaviours within early age groups.

- Emissions Reduction: <1.5%

- Sources impacted: Petrol and diesel cars
- Cost: £100k - £500k
- Funding Sources: Defra Air Quality Grant (90%) and 6 Worcestershire District Authorities match funding (10%)

5.1.8 Air Quality Improvements from New Development

The Bromsgrove District Local Plan (2011 - 2030) sets out the Council's long-term vision and strategic context for promoting, distributing and delivering sustainable development and growth within the district until 2030.

The following strategic developments outlined within the Local Plan are identified as having the potential to impact on the Worcester Road, Bromsgrove AQMA:

- Perryfields Road – Comprising 1300 dwellings, 200 unit (up to) extra care facility, up to 5 hectares of local employment land, a local centre with retail and community facilities, a first school, open space, recreational areas and sports pitches

- Whitford Road, Bromsgrove - Comprising up to 505 dwellings, and associated community infrastructure, public open space with play facilities and small scale local retail

BDC has secured mitigation measures and financial contributions to reduce impacts of these significant new developments at Perryfields Road and Whitford Road.

Measures include contributions towards junction improvements within the Worcester Road AQMA and connecting network, public transport services and infrastructure, active travel links and the A38 corridor. Contribution requirements are phased periodically throughout the build-out time of these sites and not all contributions may be received or spent within the timeframe of this AQAP.

It has not been possible to quantify impacts of this measure, at this time, due to the early stage of the many varied schemes associated with the developments. It is considered the measure is likely to deliver a small impact, <1.5%, as a maximum within the timeframe of this AQAP.

Additionally, this measure will contribute towards a reduction in $PM_{2.5}$ and carbon emissions and noise generated from road transport, and improve residents' health through increased activity.

- Emissions Reduction: <1.5%
- Sources impacted: Petrol and diesel cars, LGVs
- Cost: >£10million
- Funding Sources: s106

5.1.9 Local Bus Service Improvements

Worcestershire County Council's Bus Service Improvement Plan (BSIP) sets out the Local Transport Authority's ambition to promote the use of buses across the County. The BSIP outlines WCC's aspirations to improve Worcestershire's bus transport network, address congestion hotspots, increase frequency and reliability of services and review fare structures.

One of the headline targets within the BSIP is to increase bus patronage in Worcestershire by 25% of pre-pandemic levels by 2030.

Utilising National Traffic Survey[9] for data on Modes of Transport across region and in urban centres 2018-19 indicates Bus travel equates for 3.5% of travel on average between those two scenarios. A 0.57% reduction in car journeys in each AQMA has been assumed for modelling purposes as a result of 25% increase in bus patronage.

The result of modelling undertaken indicate the emissions reduction NOx forecast of 0.29% in Worcester Road, Bromsgrove AQMA by 2030.

Additionally, this measure will contribute towards a reduction in $PM_{2.5}$ and carbon emissions generated from road transport and noise generated from road transport, reduce congestion and improve residents' health through increased activity.

[9] Nts9903 - Average number of trips by main mode, region and rural-urban classification of residence (trips per person per year): England, 2002 onwards

- Emissions Reduction: <0.29%
- Sources impacted: Petrol and diesel cars
- Cost: £1million - £10million
- Funding Sources: BSIP funding

5.1.10 Bromsgrove Local Cycling and Walking Infrastructure Plan (LCWIP)

Government has set targets for half of all short urban journeys being walked, wheeled, or cycled by 2030 in their Cycling and Walking Investment Strategy (2017). To help to achieve this Worcestershire County Council are currently developing a Local Cycling and Walking Infrastructure Plan (LCWIP) for Bromsgrove District due for completion by March 2025.

The LCWIP, funded through Active Travel England, will set out cycling and walking improvement plans for the Bromsgrove District over a 10-year period and will form part of the Local Transport Plan (LTP5).,

It has not been possible to quantify impacts of this measure, at this time, due to the early stage of development and the unpredictable outcomes of behaviour change actions. It is considered the development stage of the measure is likely to deliver a negligible impact, <0.2%, emissions reduction by 2030 with the implementation stage predicted to deliver a small impact, <1.5%, as a minimum by completion of the programme.

Additionally, this measure will contribute towards a reduction in $PM_{2.5}$ and carbon emissions and noise generated from road transport, reduce congestion, and improve residents' health through increased activity.

- Emissions Reduction: <0.2% (Development Stage, <1.5% (Delivery Stage)
- Sources impacted: Petrol and diesel cars
- Cost: £50k - £100k (Development stage), >£10m (Delivery Stage)
- Funding Sources: WCC, Active Travel England

5.1.11 Raising Awareness Events (Countywide Air Quality Strategy)

The aim of this measure is to promote behavioural change and raise awareness of air pollution and positive action that can be taken through a programme of annual action days. An Air Quality Public Health working group was established in 2023 to assist with formation of AQAP measures and the group's initial collaborative event to raise awareness was Clean Air Day in June 2023, followed by Clean Air Night in January 2024.

At this time of writing, the future focus, contributors, and responsibilities of the working group is under review. Following resolution with air quality partners it is anticipated a programme of annual events will be scheduled as part of work towards the evolving Air Quality Strategy for Worcestershire in 2025 – refer to section 5.1.6 above for further information.

This measure aligns with other Behavioural Change encouraging focus measures, specifically those progressed as part of the developing Air Quality Strategy for Worcestershire, Travel Choices and Sustainable Modes of Travel to School .

It has not been possible to quantify impacts of this measure, at this time, due to the continuous application and the unpredictable outcomes of behaviour change actions. It is considered the measure is likely to deliver a negligible impact, <0.2%, emissions reduction by 2030.

Additionally, this measure will contribute towards a reduction in $PM_{2.5}$ and carbon emissions and noise generated from road transport, reduce congestion and improve residents' health through raised awareness, behavioural change and increased activity.

- Emissions Reduction: <0.2%
- Sources impacted: Petrol and diesel cars, LGVs
- Cost: £10k - £50k
- Funding Sources: Not yet identified

5.1.12 Communications Plan (Countywide Air Quality Strategy)

The formation of a countywide (county and district authorities) strategy for communicating messages, details of events and advice is considered a key

component of the evolving Air Quality Strategy for Worcestershire - refer to section 5.1.6 above for further information.

At this time this is at an early stage of development, though many of the other measures outlined within this AQAP will be developed and incorporated within the Communication Plan.

It has not been possible to quantify impacts of this measure, at this time, due to the early stage of development and the unpredictable outcomes of behaviour change actions. It is considered the measure is likely to deliver a negligible impact, <0.2%, emissions reduction by 2030.

Additionally, this measure will contribute towards a reduction in $PM_{2.5}$ and carbon emissions and noise generated from road transport, reduce congestion, and improve residents' health through raised awareness and behavioural change or increased activity.

- Emissions Reduction: <0.2%
- Sources impacted: Petrol and diesel cars
- Cost: £10k - £50k
- Funding Sources: Not yet identified

5.1.13 Encouraging awareness and behavioural change interventions linked to focussed real time monitoring data (Countywide Air Quality Strategy)

The aim of this measure is to utilise available real time monitoring in locations within proximity of poor air quality in Bromsgrove to inform actions to protect most vulnerable communities.

WRS in collaboration with WCC Public Health will work with identified local schools, communities and organisations to implement positive interventions and action through raising awareness of air pollution and encouraging behavioural change.

This measure will also utilise the outcomes of the baseline Air Quality Behaviour Change survey which was undertaken in 2024 by WCC Public Health. A summary of the key findings from the survey are provided in Appendix F: Air Quality Survey Summary.

In addition to contributing towards this AQAP for Bromsgrove District Council, this work also forms part of the evolving Air Quality Strategy for Worcestershire – refer to section 5.1.6 above for further information.

This measure aligns with other Behavioural Change encouraging focus measures, specifically those progressed as part of the developing Air Quality Strategy for Worcestershire, Travel Choices and Sustainable Modes of Travel to School .

It has not been possible to quantify impacts of this measure, at this time, due to the early stage of development and the unpredictable outcomes of behaviour change actions. It is considered the measure has the potential to deliver a negligible, <0.2%, emissions reduction by 2030.

Additionally, this measure will contribute towards a reduction in $PM_{2.5}$ and carbon emissions and noise generated from road transport, reduce congestion, and improve residents' health through raised awareness and behavioural change or increased activity.

- Emissions Reduction: <0.2%
- Sources impacted: Petrol and diesel cars
- Cost: £10k - £50k
- Funding Sources: Not yet identified

5.1.14 ECO Driving Training Scheme

Eco-driver training teaches fleet operatives to adopt a safer and more economic approach to driving. Emission reduction of local air pollutants is achieved through fuel management, and efficient vehicle use. It can also assist with meeting carbon reduction targets and reducing fuel (up to 6% estimated by Energy Saving Trust) and vehicle maintenance costs.

Training focuses on anticipating road conditions earlier, driving more smoothly, avoiding high revs and to obey speed limits. The negative impacts of vehicle idling, use of air conditioning and unnecessary drag/weight due to equipment like roof racks or carrying excessive amounts of equipment is also considered. Good vehicle maintenance such as maintaining the correct tyre pressures is also included.

Many employers, such as Bromsgrove District Council, use eco-driver training in conjunction with onboard vehicle telematics which continuously monitor driver performance. These systems can be used to reward good drivers and trigger re-training for under-performing drivers. Competition can be encouraged between drivers to achieve the best mpg figures or similar.

Eco-driver training at Bromsgrove District Council is contracted to a specialist third party to deliver the training. The current contract is due to expire shortly and BDC are presently assessing options for a new scheme allied with potential alternative fuel drive trains and depot infrastructure in the future.

It has not been possible to quantify impacts of this measure, at this time, due to the early stage of development. It is considered the measure has the potential to deliver a negligible, <0.2%, emissions reduction by 2030.

Additionally, this measure will contribute towards a reduction in $PM_{2.5}$ and carbon emissions and noise generated from road transport.

- Emissions Reduction: <0.2%
- Sources impacted: Council owned Light Duty Vehicles (Vans and cars) and Heavy-Duty Vehicles (maintenance vehicles such as Refuse vehicles RCVs)
- Cost: £10k - £50k
- Funding Sources: Not yet identified

5.1.15 Travel choices

Worcestershire County Council propose to refresh measures to promote sustainable travel choices focussed on web and app-based journey planners to provide travel information and promote sustainable modes of transport (Public Transport/Active Travel modes).

Previous schemes have achieved notable changes in travel mode choice across the county between 2004 and 2008. Based on surveys with representative samples of more than 4,000 people before and after travel choice schemes were introduced, there was a relative:

- Reduction of 7 per cent in car-as-driver trips per person per year
- Reduction of 4 per cent in car-as-passenger trips

- Increase of 11 per cent in walking trips
- Increase of 19 per cent in bicycle trips
- Increase of 20 per cent in bus trips
- Estimated saving of around 3,900 tonnes of CO^2 per year from personal car use

This measure aligns with other Behavioural Change encouraging focus measures, particularly those progressed as part of the developing Air Quality Strategy for Worcestershire.

It has not been possible to quantify impacts of this measure, at this time, due to the early stage of development and the unpredictable outcomes of behaviour change actions. It is considered the measure has the potential to deliver a small, <1.5%, emissions reduction by 2030.

Additionally, this measure will contribute towards a reduction in $PM_{2.5}$ and carbon emissions and noise generated from road transport, reduce congestion and improve residents' health through increased activity.

- Emissions Reduction: <1.5%
- Sources impacted: Petrol and diesel cars
- Cost: £500k - £1m
- Funding Sources: Not yet identified

5.1.16 A38 Bromsgrove Route Enhancement Programme (BREP)

The A38 Bromsgrove Route Enhancement Programme (BREP) aims to provide additional highway capacity and promote walking and cycling as an alternative, through a range of improvements along the whole corridor. Phases 1 and 2 of the programme were completed in 2021. Phase 3 is currently in progress with a future Phase 4 being planned.

The BREP scheme covers improvements along the length of the A38 between Lydiate Ash (M5, Junction 4) to Hanbury Turn (junction with B4091 Hanbury Road), running from the north of Bromsgrove, along the east and to south of the AQMA.

Full details of the scheme can be found on the County Council's website below:

A38 Bromsgrove Route Enhancement Programme (BREP) | Worcestershire County Council

It is considered the measure will have indirect benefits on the AQMA through active travel improvements and increased take up.

It has not been possible to quantify impacts of this measure, at this time, due to the unpredictable outcomes of behaviour change actions. It is considered the measure likely has the potential to deliver a negligible, <0.2%, emissions reduction within the AQMA by 2030.

Additionally, this measure will contribute towards a reduction in $PM_{2.5}$ and carbon emissions and noise generated from road transport, reduce congestion, and improve residents' health through increased activity.

- Emissions Reduction: <0.2%
- Sources impacted: All vehicle types
- Cost: >£10m
- Funding Sources: Department For Transport

5.1.17 Sustainable Modes of Travel to School

It has been identified more support and resource is required to help schools within Bromsgrove develop Travel Plans and put into action.

Bromsgrove District Council with air quality partner Worcestershire County Council will encourage and support schools to become ModeSHIFT star accredited through the introduction and implementation of travel plans, cycling and create long-term change in travel habits for school aged children and their parents.

This measure aligns with other Behavioural Change encouraging focus measures, particularly those progressed as part of the developing Air Quality Strategy for Worcestershire, outlined above.

There are five schools located within, or in the vicinity, of Worcester Road, Bromsgrove AQMA Coventry Street with an estimated 3786 pupils in attendance as

of August 2024. Utilising data from the National Traffic Survey[10] indicates that 33% of pupils travel to school by car or van which equates to 1249 journeys twice a day within the AQMA on weekdays during school term time.

This measure is at an early stage of development and the outcomes of behaviour change actions are unpredictable. However for purposes of modelling impact of this measure a 10% reduction in school travel by car/van in participating schools is considered feasible and it is anticipated the measure will deliver a small impact as a maximum, <1.5%, emissions reduction by 2030.

Additionally, this measure will contribute towards a reduction in $PM_{2.5}$ and carbon emissions and noise generated from road transport, reduce congestion, improve residents' health through increased activity and encourage long term sustainable and healthy travel behaviours within early age groups.

- Emissions Reduction: <1.5%
- Sources impacted: Petrol and diesel cars, LGVs
- Cost: £100k - £500k
- Funding Sources: Not yet identified

5.1.18 Bus stop infrastructure – bus shelter provision

Worcestershire County Council propose to improve and upgrade bus shelters to promote bus use and increase modal shift from cars to public transport. This measure would include display screens to provide up to date information such as service routes. Potentially this measure would be delivered as part of the Bus Service Improvement Plan (BSIP) and Enhanced Partnership (EP).

It is considered the measure is likely to deliver a negligible impact, <0.2%, emissions reduction by 2030.

[10] nts0613 National Traffic Survey - school modes of transport

Additionally, this measure will contribute towards a reduction in $PM_{2.5}$ and carbon emissions and noise generated from road transport, reduce congestion and improve residents' health through increased activity such as walking to bus stops.

- Emissions Reduction: <0.2%
- Sources impacted: Petrol and diesel cars
- Cost: £500k - £1m
- Funding Sources: Not yet identified

5.1.19 Demand Response Travel

Demand responsive transport (DRT) offers an alternative transport option to fixed route public transport services and to private vehicle use. It helps people make essential local journeys within a defined area, and offers residents and visitors transport within a zoned area and to specific places of interest outside of the zone.

The service can also provide journeys to connecting transport services, such as other local buses or to local train stations.

Passengers can request transport through an app for a specific time or to arrive at their destination at a specific time and this will give a selection of boarding times available. Transport will collect the passenger from a designated pick-up point and will drop off at the required location. Unlike fixed route bus services, the service is flexible depending on the destinations and collection points.

The Worcestershire on Demand (WoD) initiative is currently operating within parts of Bromsgrove District with plans to expand to the eastern areas of the district within the lifetime of this AQAP.

The initial outcomes of the pilot WoD was reported within the Bus Service Improvement Plan (BSIP) in July 2021: 600 journeys per week across Bromsgrove and Malvern, 6 days per week.

It has not been possible to quantify impacts of this measure, at this time, due to the early stage of development. However based upon above data it is considered the measure has the potential to deliver a negligible impact, <0.2%, emissions reduction by 2030.

Additionally, this measure will contribute towards a reduction in $PM_{2.5}$ and carbon emissions and noise generated from road transport, reduce congestion and improve residents' health through increased activity.

- Emissions Reduction: <0.2%
- Sources impacted: Petrol and diesel cars
- Cost: £500k - £1million
- Funding Sources: Not yet identified

5.1.20 Bromsgrove District Council Vehicle Fleet Upgrade - Refuse Collection Vehicles

Reducing the emissions from its own vehicle fleet is a priority for Bromsgrove District Council and to this end the council have a rolling programme of vehicle replacement.

The replacement of current Refuse Collection Vehicles (RCV) with newer EC VI (Eurocode 6) vehicles are planned within the lifetime of this AQAP. RCVs contribute to the emissions attributable to HGVs which make up 6.07% of local road source emissions in Worcester Road, Bromsgrove AQMA.

The council are exploring the potential to transition to an electric fleet and depot in the future, but it is at too early stage of development to determine impacts on the AQMA at this time.

Additionally, the council are also exploring the potential to transition to alternative fuel additives such as Hydrotreated Vegetable Oil (HVO) but there are no firm plans at this time.

Given the limited number of daily movements through the AQMA, on average less than 1 a day, it is considered the measure is likely to deliver a negligible impact, <0.2%, emissions reduction by 2030.

Additionally, this measure will contribute towards a reduction in $PM_{2.5}$ and carbon emissions generated from road transport.

- Emissions Reduction: <0.2%
- Sources impacted: HGVs
- Cost: £1million - £10million

- Funding Sources: Bromsgrove District Council

Table 5.1 – Air Quality Action Plan Measures

Measure No.	Measure	Category	Classification	Estimated Year Measure to be Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Target Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Potential Barriers to Implementation
1	EV Charging Strategy	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2025	2025	**WCC**, BDC	LEVI capability funding	N	Fully Funded	£50k - £100k	Implementation	**35%***	Publication of Strategy	Funding secured	public consultation summer 2024, adoption of final strategy late 2024/early 2025
2	Public EV Charging Points	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2024	2025	WCC, **BDC**	Government sponsored Charging Infrastructure Investment Fund	N	Funded	£50k-£100k	Implementation	**35%***	Installation of chargepoints. Number of vehicles charging / number of new users	Installation of 5 additional public chargepoints in Bromsgrove Town due by spring 2025	Contract with supplier for 10+ years, potentially further charge points in lifetime of AQAP
3	LEVI Capacity Funding	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2025	2029	**WCC**, BDC	£3.4m local EV Infrastructure Fund	N	Fully Funded (subject to business case process)	£1 million - £10 million	Planning	**35%***	Number of EV chargers installed	Planning Phase	subject to 3- stage business case process
4	Bus fleet improvements (local bus services)	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	2025	2026	**Bus Operators,** WCC, WRS	Not Yet Identified	N	To Be Confirmed	£1 million-£10million	Planning	9%	% of bus fleet Euro 6	Planning Phase	Funding availability, Operator Agreement
5	Countywide AQ Strategy - Behavioural Change Officer Post	Public Information	Via other mechanisms	2024	2026	**WRS**	S106	N	Funded	£100k - £500k	Implementation	<1.5%	Future Stakeholder engagement	post begun 25/02/24	
6	Countywide AQ Strategy - Encouraging awareness via Public Portal of real time	Public Information	Via the Internet	2024	2027	**WRS**, Earthsense, WCC, District Councils	Defra, Districts	Yes	Fully Funded	£100k - £500k	Completed	<1.5%	Number of website hits on public portal	Monitors deployed Jan 2024, Public Portal due April 2024	

Measure No.	Measure	Category	Classification	Estimated Year Measure to be Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Target Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Potential Barriers to Implementation
	monitoring data														
7	Air Quality Improvements from New Development	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2024	2035	WCC, BDC, Developers	s106 Funding	N	Funded	£1 million - £10 million	Planning	<1.5%	s106 agreements completed	2 Phased developments, Phase 1 of each dev being delivered, remaining are in planning stages	Subject to planning applications being approved for later phases. Big impacts delivered in later development phases
8	Local bus service improvements funded from Bus Service Improvement Plan (BSIP) and Enhanced Partnership (EP)	Transport Planning and Infrastructure	Public transport improvements-interchanges stations and services	2026	2030	WCC, Bus Operators	BSIP funding	N	To Be Confirmed	£1 million - £10 million	Planning	<0.3%	Bus patronage (passenger demand)	Planning Phase	
9	Bromsgrove Local Cycling and Walking Infrastructure Plan (Scheme Delivery)	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	2025	2035	**WCC** inc. Public Health, BDC, key stakeholders, Active Travel England	Active Travel England, Developer contributions	N	To Be Confirmed	>£10million	Planning	<1.5%	Scheme delivery monitoring (e.g. cycle counts)	Planning Phase	Funding Availability
10	Bromsgrove Local Cycling and Walking Infrastructure Plan (Development)	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	2024	2025	**WCC** inc. Public Health, BDC, key stakeholders, Active Travel England	WCC, Active Travel England	N	Fully funded	£50k-£100k	Planning	<0.2%	LCWIP completed by March 2025	Planning Phase	
11	Countywide AQ Strategy - Raising awarenes s events	Public Information	Other	2023	Ongoing	**WCC Public Health**, WRS	Not yet identified	N	To be confirmed	£10k-50k	Implementation	<0.2%	Support minimum of 3 national events. Number of events attended. Number of	Clean Air Day 06/2023, Clean Air Night 01/2024 promotion undertaken. Further events planned for 2024	

Measure No.	Measure	Category	Classification	Estimated Year Measure to be Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Target Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Potential Barriers to Implementation
													people engaged		
12	Countywide AQ Strategy - Communications Plan	Policy Guidance and Development Control	Other	2025	Ongoing	**WCC Public Health**, WRS	Not yet identified	N	To be confirmed	£10k-50k	Planning	<0.2%	Production of communication plan	Planning Phase	
13	Countywide AQ Strategy - Encouraging awareness and behavioural change interventions linked to focussed real time monitoring data	Public Information	Via other mechanisms	2024	2027	WRS, **WCC**, District Councils	Not Yet Identified	N	To Be Confirmed	£10k-50k	Planning	<1.5%	Number of responses to survey, hits on website, data captured. Changed behaviour identified from repeat survey in future	Baseline AQ Survey completed Feb - May 2024	
14	Eco Driving Training/ Scheme	Vehicle Fleet Efficiency	Driver training and ECO driving aids	2025	Ongoing	**BDC**	BDC	N	To Be Confirmed	£10k-50k	Planning	<0.2%	Number of operatives completing training	Planning Phase	
15	Travel Choices	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	2025	2030	**WCC** inc. Public Health, BDC, key stakeholders - schools, UoW	Not Yet Identified	N	To Be Confirmed	£50k - £100k	Planning	<1.5%	Number of walking, cycling, scooting and number of participating organisations and activities delivered	Planning Phase	Funding availability
16	A38 BREP MRN Scheme - active travel and bus infrastructure enhancements	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle	2024	2026	**WCC**	DfT	N	Phase 3 Fully Funded	>£10million	Implementation	<0.2%	Completion of works	In Delivery	

Measure No.	Measure	Category	Classification	Estimated Year Measure to be Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Target Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Potential Barriers to Implementation
			occupancy lane												
17	Travel to school	Promoting Travel Alternatives	School Travel Plans	2025	2030	**WCC** inc. Public Health, BDC, Schools & Colleges	Not Yet Identified	N	To Be Confirmed	£100k-£500k	Planning	<1.5%	Number of walking, cycling, scooting, car, and park & stride trips; Number of participating schools and of activities delivered	Planning Phase	Funding availability
18	Bus stop infrastructure – bus shelter provision	Transport Planning and Infrastructure	Public transport improvements-interchanges stations and services	2025	2030	**WCC,** Bus operators	Not Yet Identified	N	To Be Confirmed	£500k-£1million	Planning	<0.2%	Bus patronage (passenger demand)	Planning Phase	Funding availability
19	Demand Response Travel (DRT)	Alternatives to private vehicle use	Other	2024	2025	**WCC**, Bus Operators, BDC	WCC	N	To Be Confirmed	£1million-£10m	Implementation	<0.2%	Bus patronage (passenger demand)	Planning Phase	funding availability
20	BDC Vehicle Fleet Upgrade - Refuse Collection Vehicle and other Heavy and Light Commercial Vehicle Upgrades	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	2024	2029	**BDC**	BDC	N	Funded	£1 million-£10million	Implementation	<0.2%	Replacement of vehicles	Rolling replacement programme	

*Part contribution

Appendix A: Response to Consultation

Table A.1 – Summary of Responses to Consultation and Stakeholder Engagement on the AQAP

Consultee	Category	Response
<Insert consultee e.g. Chamber of Commerce>	<Insert category e.g. Business>	<Insert text e.g. Disagree with plan to remove parking on High Street in favour of buses and cycles; consider it will harm business of members>

Appendix B: Reasons for Not Pursuing Action Plan Measures

Table B.1 – Action Plan Measures Not Pursued and the Reasons for that Decision

Action category	Action description	Reason action is not being pursued (including Stakeholder views)
Promoting Low Emission Transport	Clean Air Zone or Low Emission Zone	Bromsgrove District Council are not one of the LA mandated or supported by government to implement a Clean Air Zone or undertake a feasibility study to do so supported by Clean Air Funding in 2017. Research indicates significant resource: research, data, studies, costs and time are required in setting up a CAZ. No such resource is currently available. Additionally determined focus measures are anticipated to deliver required reductions without requirement for consideration of a CAZ.
Promoting Low Emission Transport	Procuring alternative refuelling infrastructure other than EV recharging such as Biofuels, Compressed Natural	Not feasible to focus on numerous alternative fuel technology infrastructure within lifetime of this AQAP. Focus on EV which has greatest impetus from national policies, manufacturing industry and

Action category	Action description	Reason action is not being pursued (including Stakeholder views)
	Gas (CNG) or Liquid Natural Gas (LNG), Hydrogen	public support at this time. Potential for hydrogen in future but in infancy locally at this time.
Promoting Low Emission Transport	Emission Based Parking or Permit Charges	Unlikely to be a cost-effective measure considering research, data, studies, costs and time required to deliver and emissions reduction required to achieve compliance within lifetime of AQAP.
Promoting Travel Alternatives	Promote use of inland waterways to move freight as a low emissions alternative	Considered unlikely to provide significant impact in reducing NOx in AQMAs.
Traffic Management	Low Traffic Neighbourhoods (LTNs)	Designed to reduce traffic in residential streets, rather than Strategic Road Network. Not feasible within characteristic of AQMA or primary bus routes
Traffic Management	Speed reduction to 20mph zone	Research indicates lack of real time studies available focussing on AQ impact. Additionally considered unfeasible on Strategic Road Network characteristic in the AQMAs.

Action category	Action description	Reason action is not being pursued (including Stakeholder views)
Traffic Management	Road User Charging/Congestion Charging	Similar to CAZ (above) significant resource required to implement. Unlikely to be actioned within lifetime of this AQAP, not supported and determined focus measures are anticipated to deliver compliance with current AQO without need for such a scheme.
Traffic Management	Anti Idling Enforcement (Fixed Penalty Notices issue for stationary idling when parked under The Road Traffic (Vehicle Emissions) (Fixed Penalty) (England) Regulations 2002	Insufficient data on impact of idling in AQMA and no clear evidence on AQ benefits. Additionally, unlikely support for measure and significant cost to operate, maximum FPN £20 only. Anti idling outside schools, or other environments, campaign may be considered separately as part of raising awareness and encouraging behavioural change actions.
Traffic Management	Vehicle priority and High Occupancy Vehicle (HOV) lanes	Not considered feasible or supported due to limited road space in AQMAs
Traffic Management	Testing Vehicle Emissions and issue of FPNs for non-compliance	Not supported at this time or likely to be delivered within lifetime of this AQAP.

Action category	Action description	Reason action is not being pursued (including Stakeholder views)
Traffic Management	Workplace Parking Levy (WPL) - a charge LA can impose on employers and education organisations based on the number of parking spaces provided	Unlikely to be a cost-effective measure considering research, data, studies, costs and time required to deliver and emissions reduction required to achieve compliance within lifetime of AQAP. Not supported at this time or likely to be delivered within lifetime of this AQAP.
Transport Planning and Infrastructure	Removing some bus stops to reduce dwell times and journey times	Concern this would discourage public transport users and is counter intuitive to encouraging behavioural change aspects of this plan and other local strategies.
Vehicle Fleet Efficiency	Vehicle Retrofitting programmes – fitting devices to reduce emissions such as Diesel Particulate Filters (DPF) to buses	Evidence that retrofitting programmes do not deliver required benefits over time. Costly and more efficient in long term to replace vehicle nearing end of life.

Appendix C: Qualitative Assessment of Measures (Shortlisting)

Table C.1 Stage 1 Qualitative Assessment of Measures

RAG	Timeline for implementation	Support for measure	Practical Application	Deliverability	Anticipated Air Pollutant reduction	Data to quantify impact	Progress to Stage 2 Impact Assessment	Potential to progress to Stage 2 in the future
Green	Within 5 years	Likely Social and political support	Feasible	Yes	Significant	Available	Yes/No (Green/Red)	Potentially Within lifetime of AQAP
Amber	Potentially within 5 years	Potential social and/or political support	Potentially feasible	Potentially	Low to Medium impact or insufficient info to make a determination	Not available at time of draft plan, anticipated within 5 years		Post lifetime of this AQAP, consideration for
Red	Greater than 5 years	Unlikely social and political support	Not feasible	No	Negligible or Negative	Not available or forthcoming in next 5 years		Unlikely to be progressed in the future

Stage 1 – a RAG qualitative stage using officer experience and professional opinion to filter out measures (specific to that AQMA(s)) for progressing to quantified Cost Benefit Analysis Stage 2 or including as a non-quantified focus measure. Filtering process considers timeline for deliverability, political and social support and practical application which combined determine deliverability within this AQAP and consideration as a focus measure. The first three categories are weighted in that if a measure has a red classification, it is not progressed to Stage 2 Impact Assessment at this time. The anticipated pollutant reduction and availability of data is then considered to determine if progress to quantification of the measure is appropriate. Measures are sorted according to deliverability and anticipated NO_2 reduction and shown in Appendix D in the groups outlined in section 4.2.3.

Key to categories in Stage 1 qualification of benefit of proposed and potential measures

Timeline for implementation – of measure such that is contributing to reduction in air pollution with consideration for lifetime of this AQAP.

Support for Measure – Political or social support for delivering action.

Practical Application - can the action be practically implemented within the AQMA(s).

Deliverability – summary of above 3 categories to determine feasibility for delivering within lifetime of this AQAP

Anticipated Air Pollutant Reduction – in the context of this AQAP this relates specifically to reduction in concentration of nitrogen dioxide within current AQMAs. Measures classified Green are anticipated to deliver a significant measurable reduction in pollutant concentration, red classified measures are anticipated to not deliver any measurable impact or potentially even a detrimental impact within the AQMA. Amber classification is somewhere in between two extremes and includes measures where there is insufficient information at time of AQAP to make a firm determination.

Data to quantify impact – Availability of data to enable quantification of amount of pollutant reduction to assist in Stage 2 analysis of impact.

Focus Measure – Top quantifiable and non- quantifiable measures that Bromsgrove District Council and Air Quality Partners have determined will form focus of delivering within AQAP.

Progress to Stage 2 – Progress to second stage of analysis of measures for formal quantification of impacts on pollutant concentration and cost of measure.

Potential progress in future – additional information on actions with potential for further progression as part of future works, policies or strategies for consideration within future updates to the AQAP. As the AQAP is a live document, the focussed actions will be updated with any additional measures with significant and cost benefit analysis during the lifetime of the plan.

Appendix D: Outcomes of Stage 1 Shortlisting Process

Table D.1 Outcomes of Shortlisting

Measure	Further detail	Timeline for implement-ation	Strategic support	Practical appli-cation	Deliver-ability	Antici-pated NO_2 reduction in AQMA	Data to quantify	Progress to Stage 2 Impact Assessment	Potential to progress to Stage 2 in future	Outcome
EV Charging Strategy	EV strategy developed in 2024	Within 5 years	Supported	Feasible	Yes	Significant	Available	Yes	N/A	Focus Measure
Public EV Charging Points	Installation of public/residential EV charging points/hubs to support transition of local vehicle parc to BEV	Within 5 years	Supported	Feasible	Yes	Significant	Yes	Yes	N/A	Focus Measure
Bus fleet improvements (local bus services)	Work with bus operators to aid their procurement of EuroCode 6 or above. Provide cleaner local bus fleet.	Within 5 years	Likely support	Feasible	Yes	Potentially Significant	Available	Yes	N/A	Focus Measure
Countywide AQ Strategy - Behavioural Change Officer Post	Funded Behavioural Change officer post for period of 2 years to focus on working with schools and communities across the County, utilising monitoring data to inform programmes	Within 5 Years	Likely support	Feasible	Yes	Potential Measurable Benefit in future	Potentially in lifetime of AQAP	Yes	N/A	Focus Measure

Measure	Further detail	Timeline for implement-ation	Strategic support	Practical appli-cation	Deliver-ability	Antici-pated NO_2 reduction in AQMA	Data to quantify	Progress to Stage 2 Impact Assessment	Potential to progress to Stage 2 in future	Outcome
Countywide AQ Strategy - Encouraging awareness and behavioural change interventions linked to focussed real time monitoring data	Use of real time monitoring data in locations near schools and/or areas of deprivation to inform actions and work with local schools/ communities/ organisations to implement interventions through awareness and behaviour change	Within 5 Years	Likely support	Feasible	Yes	Insufficient info at this time	Potentially in lifetime of AQAP	Yes	N/A	Focus Measure
Travel to School	Encourage and support schools to become ModeSHIFT star accredited through the introduction and implementation of travel plans. Support schools in implementing cycling and walking buses. Create long-term change in travel habits for school aged children and their parents.	Within 5 years	Supported	Feasible	Yes	Potential Measurable Benefit	Potentially within lifetime of AQAP	Yes	N/A	Focus Measure

Measure	Further detail	Timeline for implement-ation	Strategic support	Practical appli-cation	Deliver-ability	Antici-pated NO_2 reduction in AQMA	Data to quantify	Progress to Stage 2 Impact Assessment	Potential to progress to Stage 2 in future	Outcome
Countywide AQ Strategy - Encouraging awareness via Public Portal of real time monitoring data	Publicly available real time monitoring data from 26 low-cost sensors (Zephyrs) installed around the County, monitoring range of pollutants and sources. To encourage public awareness and behavioural change.	Within 5 Years	Likely support	Feasible	Yes	Insufficient info at this time	Not available	Yes	N/A	Focus Measure
Countywide AQ Strategy - Raising awareness events	Promoting behavioural change and awareness through programme of annual action days such as Clean Air Day, Clean Air Night, International Clean Air for Blue Skies Day	ongoing in lifetime of AQAP	Likely support	Feasible	Yes	Negligible	Not available	Yes	N/A	Focus Measure
Countywide AQ Strategy - Communication Plan	Countywide (County and partners authorities) joined up communication for events/messaging/ website advice	Within 5 Years	Likely support	Feasible	Yes	Negligible	Not available	Yes	N/A	Focus Measure

Measure	Further detail	Timeline for implement-ation	Strategic support	Practical appli-cation	Deliver-ability	Antici-pated NO_2 reduction in AQMA	Data to quantify	Progress to Stage 2 Impact Assessment	Potential to progress to Stage 2 in future	Outcome
A38 BREP MRN Scheme - active travel and bus infrastructure enhancements	As well as highway junction improvements, A38 BREP includes a range of improvements to cycling and walking routes alongside and across the A38; A38 BREP to include traffic signal enhancements which will help buses cross the A38 corridor and new bus shelters with RTI systems	Within 5 years	Likely support	Feasible	Yes	Negligible	Not available	Yes	N/A	Focus Measure
Bus stop infrastructure – bus shelter provision	Improvements and upgrades to bus shelters that would include display screens to provide update info on routes etc.to promote modal shift to public transport. Potentially as part of Bus Service Improvement Plan / Enhanced Partnership.	Within 5 years	Likely support	Feasible	Yes	Negligible	Not available	Yes	N/A	Focus Measure

Measure	Further detail	Timeline for implement-ation	Strategic support	Practical appli-cation	Deliver-ability	Antici-pated NO_2 reduction in AQMA	Data to quantify	Progress to Stage 2 Impact Assessment	Potential to progress to Stage 2 in future	Outcome
Bromsgrove Vehicle Fleet Upgrade - Refuse Collection Vehicle	Fleet upgrades (Euro Code 6)	Within 5 years	Supported	Feasible	Yes	Negligible	Available	Yes	N/A	Focus Measure
LEVI Capacity Funding	Implementation of EV charging strategy	Potentially within 5 years but Up to 10 years	Supported	Feasible	Potentially	Significant	Yes	Yes	N/A	Focus Measure
Local bus service improvements funded from Bus Service Improvement Plan (BSIP) and Enhanced Partnership (EP)	DfT has provided Worcestershire with indicative LTA BSIP funding for 2024/25 to enhance local bus services including the expansion of DRT services	Potentially within 5 years but up to 10 years	Likely support	Feasible	Potentially	Insufficient info at this time	Potentially Available	Yes	N/A	Focus Measure

Measure	Further detail	Timeline for implement-ation	Strategic support	Practical appli-cation	Deliver-ability	Antici-pated NO_2 reduction in AQMA	Data to quantify	Progress to Stage 2 Impact Assessment	Potential to progress to Stage 2 in future	Outcome
Bromsgrove Local Cycling and Walking Infrastructure Plan	Report setting out cycling, walking and wheeling plans over 10 year period. LCWIPs to form part of refreshed Local Transport Plan (LTP5). Sustrans developing Bromsgrove LCWIP on behalf of County during 2024/25	Potentially within 5 years but Up to 10 years	Likely support	Feasible	Potentially	Insufficient info at this time	Potentially within lifetime of AQAP	Yes	N/A	Focus Measure
Travel Choices	To refresh 'soft' measures to promote sustainable travel choice focussed on web and app-based journey planners - to provide travel information and promote sustainable modes (Public Transport/Active Travel)	Within 5 years	Likely support	Feasible	Potentially	Insufficient info at this time	Potentially within lifetime of AQAP	Yes	N/A	Focus Measure
Demand Response Travel (DRT)	Potential expansion of existing DRT (Bromsgrove On Demand) to eastern areas of district.	Within 5 years	Potential social and/or political support	Potentially Feasible	Potentially	Insufficient info at this time	Potentially Available	No	N/A	Focus Measure

Measure	Further detail	Timeline for implement-ation	Strategic support	Practical appli-cation	Deliver-ability	Antici-pated NO_2 reduction in AQMA	Data to quantify	Progress to Stage 2 Impact Assessment	Potential to progress to Stage 2 in future	Outcome
Driver training and ECO driving aids	ECO driving/driver skills development (for LA fleets) - Eco-driver training teaches fleet operatives to adopt a safer and more economic approach to driving. It can help to reduce fuel costs for the employer (estimated at up to 6% in the long term for fleets by the Energy Saving Trust) and reduces emissions of local air pollutants.	Insufficient info at this time to determine	Potential social and/or political support	Potentially Feasible	Insufficient info at this time to determine	Negligible	Potentially Available	No	N/A	Focus Measure
Air Quality Improvements from New Development	s106 Agreements identified for large developments - Perryfields & Whitford Rd	Potentially some impact within 5 years but up to 12 years	Likely support	Feasible	Potentially	Negligible	Not available	Yes	N/A	Focus Measure
Public Health vision for Worcestershire AQ Strategy	Aim and Vision as part of the Countywide Strategy for improving air quality and reducing impacts on health	Within 5 Years	Likely support	Feasible	Yes	Negligible	Not available	No	To be developed further as part of countywide AQ Strategy	Potential Future option

Measure	Further detail	Timeline for implement-ation	Strategic support	Practical appli-cation	Deliver-ability	Antici-pated NO_2 reduction in AQMA	Data to quantify	Progress to Stage 2 Impact Assessment	Potential to progress to Stage 2 in future	Outcome
Accelerate transition to EVs - businesses	Plan and install an ultra-rapid charging hub with no height barrier, to encourage the use of EVs by delivery and business vehicles, and taxis	Insufficient info at this time to determine	Insufficient info at this time to determine	Insufficient info at this time to determine	Insufficient info at this time to determine	Potential Measurable Benefit	Potentially available	No	Insufficient info at this time to determine	Potential Future option
Accelerate transition to EVs - businesses	Charging facilities aimed at larger vehicles such as lorries and coaches, to encourage their use locally	Insufficient info at this time to determine	Insufficient info at this time to determine	Insufficient info at this time to determine	Insufficient info at this time to determine	Potential Measurable Benefit	Potentially available	No	Insufficient info at this time to determine	Potential Future option
Active travel – clean air route finder	Development of a walking / cycling tool such as Clean Air Route Finder (cleanairroutes.london)	Insufficient info at this time to determine	Likely support	Feasible	Potentially	Insufficient info at this time to determine	Not available	No	Insufficient info at this time to determine	Potential Future option
Accelerate transition to EVs – salary sacrifice	Encourage local businesses to introduce a salary sacrifice scheme for EVs	Insufficient info at this time to determine	Potential social and/or political support	Insufficient info at this time to determine	Insufficient info at this time to determine	Insufficient info at this time to determine	Not available	No	Insufficient info at this time to determine	Potential Future option

Measure	Further detail	Timeline for implement-ation	Strategic support	Practical appli-cation	Deliver-ability	Antici-pated NO_2 reduction in AQMA	Data to quantify	Progress to Stage 2 Impact Assessment	Potential to progress to Stage 2 in future	Outcome
Accelerate transition to EVs - businesses	Campaign including roadshows, information, trial opportunities, partnerships with dealerships etc to encourage businesses to transition to EVs	Insufficient info at this time to determine	Insufficient info at this time to determine	Insufficient info at this time to determine	Insufficient info at this time to determine	Insufficient info at this time to determine	Not available	No	Insufficient info at this time to determine	Potential Future option
Council fleet route optimisation	Route optimisation to avoid AQMAs where possible by council fleet (RCVs in particular)	Insufficient info at this time to determine	Potential social and/or political support	Potentially Feasible	Potentially	Negligible	Potentially available	No	Insufficient info at this time to determine	Potential Future option
Countywide AQ Strategy: Link to workplace health schemes	Communication: Health based campaigns - Air pollution is associated with a number of adverse health impacts. It is recognised as a contributing factor in the onset of heart disease and cancer.	Within 5 years	Likely support	Potentially Feasible	Potentially	Negligible	Not available	No	To be developed further as part of countywide AQ Strategy	Potential Future option
Countywide AQ Strategy: Anti-idling schools campaign	Anti-idling initiatives in educational settings - for awareness-raising, campaign work and signage in the vicinity of schools can be an effective mechanism for reducing idling emissions from vehicles during	Within 5 years	Potential social and/or political support	Potentially Feasible	Potentially	Negligible	Not available	No	To be developed further as part of countywide AQ Strategy	Potential Future option

Measure	Further detail	Timeline for implement-ation	Strategic support	Practical appli-cation	Deliver-ability	Antici-pated NO_2 reduction in AQMA	Data to quantify	Progress to Stage 2 Impact Assessment	Potential to progress to Stage 2 in future	Outcome
	school drop-offs and pick-ups.									
Active travel - bikeability	Roll out of adult / family bikeability training on a district wide basis, based from the community centres and other hubs	Insufficient info at this time to determine	Likely support	Feasible	Potentially	Negligible	Not available	No	Insufficient info at this time to determine	Potential Future option
Accelerate transition to EVs – salary sacrifice	Introduce a salary sacrifice scheme for Council employees to purchase an EV in a tax efficient manner	Insufficient info at this time to determine	Potential social and/or political support	Feasible	Potentially	Negligible	Not available	No	Unlikely	Potential Future option
Freight Partnerships for town centre deliveries	Freight Quality Partnerships - Freight Quality Partnerships (FQPs) are groups and/or forums between the freight industry, local authorities, local businesses, the local community, environmental groups and others who may	Greater Than 5 Years	Not supported	Potentially Feasible	No	Potentially Significant	Not available	No	Likely as part of future Freight Strategy	Potential Future option

Measure	Further detail	Timeline for implement-ation	Strategic support	Practical appli-cation	Deliver-ability	Antici-pated NO_2 reduction in AQMA	Data to quantify	Progress to Stage 2 Impact Assessment	Potential to progress to Stage 2 in future	Outcome
	have an interest in freight.									
LA fleet improvements	LA fleet including gritters and minibuses, move to Euro 6 engines	Greater Than 5 Years	Likely support	Feasible	No	Potential Measurable Benefit from school buses	Potentially Available	No	Likely beyond lifetime of AQAP	Potential Future option
Emission control equipment for small and medium sized stationary combustion sources / replacement	NRMM - Non-Road Mobile Machinery (NRMM) means any mobile machine, transportable equipment or vehicle with or without bodywork or wheels which isn't intended for carrying passengers or goods on the road and which incorporates a combustion engine.	Likely beyond 5 years	Not supported	Feasible	No	Insufficient info at this time	Potentially Available	No	Likely beyond lifetime of AQAP	Potential Future option

Measure	Further detail	Timeline for implement-ation	Strategic support	Practical appli-cation	Deliver-ability	Antici-pated NO_2 reduction in AQMA	Data to quantify	Progress to Stage 2 Impact Assessment	Potential to progress to Stage 2 in future	Outcome
Fleet efficiency and recognition schemes (FORS)	Fleet Recognition Schemes Fleet Recognition Schemes are voluntary accreditation schemes which measure fleet performance and aim to drive up standards across areas such as fuel efficiency, vehicle emissions and safety.	Likely beyond 5 years	Not supported	Potentially Feasible	No	Insufficient info at this time	Potentially Available	No	Likely beyond lifetime of AQAP	Potential Future option
Freight Strategy	Freight Strategy to form part of refresh of LTP - review HGV routing	Likely beyond 5 years	Potential social and/or political support	Potentially Feasible	No	Insufficient info at this time	Likely not available until end of this AQAP	No	Will form part of LTP5	Potential Future option
Mobility hubs	Mobility hubs bring together shared transport with public transport and active travel in spaces designed to improve the public realm for all.	Likely beyond 5 years	Potential social and/or political support	Potentially Feasible	No	Insufficient info at this time	Likely not available until end of this AQAP	No	Will be considered as part of LTP5	Potential Future option

Measure	Further detail	Timeline for implement-ation	Strategic support	Practical appli-cation	Deliver-ability	Antici-pated NO_2 reduction in AQMA	Data to quantify	Progress to Stage 2 Impact Assessment	Potential to progress to Stage 2 in future	Outcome
LA Fleet Upgrade - Refuse Collection Vehicle and other Heavy and Light Commercial Vehicle Upgrades	Replace HCV and LCV fleet with BEV in future	Likely beyond 5 years	Potential social and/or political support	Potentially Feasible	No	Negligible	Potentially Available	No	Likely beyond lifetime of AQAP	Potential Future option
LA Fleet Upgrade - Refuse Collection Vehicle and other Heavy and Light Commercial Vehicle Upgrades	Convert newly purchased HCV and LCV fleet to Hydrotreated Vehicle Oil (HVO) fuel source in future	Potentially within 5 years	Not supported	Feasible	No	Negligible	Potentially Available	No	Unlikely	Potential Future option

Measure	Further detail	Timeline for implement-ation	Strategic support	Practical appli-cation	Deliver-ability	Antici-pated NO_2 reduction in AQMA	Data to quantify	Progress to Stage 2 Impact Assessment	Potential to progress to Stage 2 in future	Outcome
Emissions charging/Clean Air Zones /Low Emission Zones (LEZ)	If your vehicle exceeds emission standards, you may have to pay a charge if you drive in a clean air zone	Greater Than 5 Years	Not supported	Potentially Feasible	No	Significant	Not available	No	Unlikely	Not being pursued
HGV delivery access management - Bromsgrove Town centre	Routing/delivery planning - Efficient routing and delivery planning can help to reduce the number of journeys associated with deliveries, working with freight companies and other stakeholders.	Likely beyond 5 years	Not supported	Potentially Feasible	No	Insufficient info at this time	Insufficient info at this time to determine	No	Unlikely	Not being pursued
Vehicle Retrofitting programmes	Retrofits/upgrades - Retrofitting a full Diesel Particulate Filer (DPF) can reduce particulate emissions by 85-99%. A partial DPF, can reduce particulate emissions by 30-50%.	Greater Than 5 Years	Not supported	Not Feasible	No	Insufficient info at this time	Insufficient info at this time	No	Unlikely	Not being pursued

Measure	Further detail	Timeline for implement-ation	Strategic support	Practical appli-cation	Deliver-ability	Antici-pated NO_2 reduction in AQMA	Data to quantify	Progress to Stage 2 Impact Assessment	Potential to progress to Stage 2 in future	Outcome
Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles other than EV charging	Fuel Additives - chemical treatments for engines that reduce exhaust emissions. Biofuels - Biodiesel is known to reduce emissions of particulate matter and hydrocarbons, but due to having a higher oxygen content it can result in higher NOx emissions. Gas refuelling - Compressed Natural Gas (CNG) or Liquid Natural Gas (LNG) are widely reported to significantly reduce CO2, PM and NOx emissions. Hydrogen vehicles- Hydrogen vehicles use hydrogen as a fuel for motive power.	Greater than 5 years or N/A	Not supported	Not feasible to focus on numerous options	No	Potential Measurable Benefit	Not available	No	Likely beyond lifetime of AQAP	Not being pursued
Speed Reduction	Speed reduction to 20 mph zones.	Potentially within 5 years but up to 10 years	Not supported	Not Feasible	No	Insufficient info at this time	Not Available	No	Likely beyond lifetime of AQAP	Not being pursued

Measure	Further detail	Timeline for implement-ation	Strategic support	Practical appli-cation	Deliver-ability	Antici-pated NO_2 reduction in AQMA	Data to quantify	Progress to Stage 2 Impact Assessment	Potential to progress to Stage 2 in future	Outcome
Road User Charging (RUC)/ Congestion charging	Congestion charging - Congestion charges relate to a charge being made for a vehicle to drive within a certain area or on a certain road with the primary reason for the charge being to reduce congestion i.e. implemented specifically to create a disincentive to travel by private transport.	Greater Than 5 Years	Not supported	Potentially Feasible	No	Potential Measurable Benefit/ Insufficient info at this time	Not available	No	Unlikely	Not being pursued
Anti-idling enforcement	Leaving engines running when parked (stationary idling) causes unnecessary emissions, wastes fuel and adds to noise levels. The Road Traffic (Vehicle Emissions) (Fixed Penalty) (England) Regulations 2002 and the Road Traffic (Vehicle Emissions) (Fixed Penalty)(Scotland) Regulations 2003 give discretionary powers to authorised persons acting on behalf of the local authority to issue Fixed Penalty Notices	Greater Than 5 Years	Not supported	Potentially Feasible	No	Potential Measurable Benefit/ Insufficient info at this time	Not available	No	Unlikely	Not being pursued

Measure	Further detail	Timeline for implement-ation	Strategic support	Practical appli-cation	Deliver-ability	Antici-pated NO_2 reduction in AQMA	Data to quantify	Progress to Stage 2 Impact Assessment	Potential to progress to Stage 2 in future	Outcome
	(FPNs) to drivers who allow their vehicle engines to run unnecessarily whilst the vehicle is stationary on the public highway.									
Workplace Parking Levy, Parking Enforcement on highway	Workplace Parking Levy (WPL) - A Workplace Parking Levy (WPL) is a charge local authorities can make to employers and education organisations in their areas based on the number of parking spaces they provide that are regularly used by employees and students	Greater Than 5 Years	Not supported	Not Feasible	No	Insufficient info at this time	Not available	No	Unlikely	Not being pursued

Measure	Further detail	Timeline for implement-ation	Strategic support	Practical appli-cation	Deliver-ability	Antici-pated NO_2 reduction in AQMA	Data to quantify	Progress to Stage 2 Impact Assessment	Potential to progress to Stage 2 in future	Outcome
UTC, Congestion management, traffic reduction	Vehicle priority and High Occupancy Vehicle (HOV) lanes - Re-prioritising road space involves shifting road space away from one type of user to facilitate uptake by a different type of user. In the UK, vehicle priority schemes are usually aimed at providing more space for buses, taxis, bicycles and pedestrians. Urban Traffic Management Control (UTMC) systems allow different components within an area-wide traffic management systems to communicate and share information with each other.	Greater Than 5 Years	Not supported	Not Feasible	No	Negligible	Insufficient info at this time	No	Unlikely	Not being pursued
Testing Vehicle Emissions	If a local authority has designated an Air Quality Management Area., then the council can test vehicles at the roadside and issue fixed penalties to drivers whose vehicles fail.	Greater Than 5 Years	Not supported	Potentially Feasible	No	Negligible	Insufficient info at this time	No	Unlikely	Not being pursued

Measure	Further detail	Timeline for implement-ation	Strategic support	Practical appli-cation	Deliver-ability	Antici-pated NO_2 reduction in AQMA	Data to quantify	Progress to Stage 2 Impact Assessment	Potential to progress to Stage 2 in future	Outcome
Low Traffic Neighbourhood (LTNs)	A Low Traffic Neighbourhood – is a scheme introduced by the Government to try and reduce traffic in residential areas through a series of different measures. The aim is to lower the number of vehicles on the roads, increase the number of people walking or cycling, and reduce crime. Local residents and businesses can still use cars within LTNs, as well as receive visitors and deliveries, but non local traffic cannot drive through the area.	Greater Than 5 Years	Not supported	Not Feasible	No	Negligible	Not Available	No	Unlikely	Not being pursued
Bus stop rationalisation	Removing some bus stops to reduce dwell times and journey times	Greater Than 5 Years	Not supported	Not Feasible	No	Negligible	Not available	No	Unlikely	Not being pursued

Appendix E: Outcomes of Stage 2 Impact Assessment

Table E.1 Outcomes of Impact Assessment

Measure	Overall Cost	Cost Score	Funded	Cost to LA	Cost Score	Cost Score avg	Impact	Impact Score	Overall Score	Ranking
EV Charging Strategy	£50k - £100k	5	Y	£0	8	6.5	35%*	5	32.5	1
Public EV Charging Points	£100k- £500k	4	N	£0	8	6	35%*	5	30	1
LEVI Deliverability Funding	£1million- £10million	2	Y	£0	8	5	35%*	5	25	1
Bus fleet improvements (local bus services)	£1 million- £10million	2	N	£50k - £100k	5	3.5	8.80%	5	17.5	2
Countywide AQ Strategy - Behavioural Change Officer Post	£100k - £500k	4	Y	£0	8	6	<1.5%	2	12	3
Countywide AQ Strategy - Encouraging awareness via Public Portal of real time monitoring data	£100k - £500k	4	Y	<£10k	7	5.5	<1.5%	2	11	4
Air Quality Improvements from New Development	£1million- £10million	2	Y	£0	8	5	<1.5%	2	10	5

Measure	Overall Cost	Cost Score	Funded	Cost to LA	Cost Score	Cost Score avg	Impact	Impact Score	Overall Score	Ranking
Local bus service improvements funded from Bus Service Improvement Plan (BSIP) and Enhanced Partnership (EP)	£1 million-£10million	2	Y	£0	8	5	< 0.3%	2	10	5
Bromsgrove Local Cycling and Walking Infrastructure Plan (LCWIP) - Scheme Delivery	>£10 million	1	Y	£0	8	4.5	<1.5%	2	9	6
Bromsgrove Local Cycling and Walking Infrastructure Plan (LCWIP) - Development	£50k-£100k	5	Y	£0	8	6.5	< 0.2%	1	6.5	7
Countywide AQ Strategy - Raising awareness events	£10k-50k	6	N	£10k-50k	6	6	< 0.2%	1	6	8
Countywide AQ Strategy - Communications Plan	£10k-50k	6	N	£10k-50k	6	6	< 0.2%	1	6	8
Countywide AQ Strategy - Encouraging awareness and behavioural change interventions linked to focussed real time monitoring data	£10k-50k	6	N	£10k-50k	6	6	< 0.2%	1	6	8
Eco Driving Training/Scheme	£10k-£50k	6	N	£10k-50k	6	6	< 0.2%	1	6	8

Measure	Overall Cost	Cost Score	Funded	Cost to LA	Cost Score	Cost Score avg	Impact	Impact Score	Overall Score	Ranking
Travel Choices	£50k-£100k	5	N	£50k-£100k	5	5	< 0.2%	1	5	9
A38 BREP MRN Scheme - active travel and bus infrastructure enhancements	>£10 million	1	Y	£0	8	4.5	< 0.2%	1	4.5	10
Travel to school	£100k-£500k	4	N	£100k-£500k	4	4	< 0.2%	1	4	11
Bus stop infrastructure – bus shelter provision	£500k-£1million	3	N	£500k-£1million	3	3	< 0.2%	1	3	12
Demand Response Travel (DRT)	£1 million-£10million	2	N	£1 million-£10million	2	2	< 0.2%	1	2	13
BDC Vehicle Fleet Upgrade - Refuse Collection Vehicle and other Heavy and Light Commercial Vehicle Upgrades	£1 million-£10million	2	Y	£1 million-£10million	2	2	< 0.2%	1	2	13

Appendix F: Air Quality Survey Summary

The survey, conducted over three months (February to May 2024), gathered responses from 1326 participants, primarily adults aged 31 to 60, (50% of the respondents). Key findings include:

Health Impact Awareness: 35-43% of respondents expressed concern about air pollution's effects on health, while 56% understood that air pollution affects all ages but especially vulnerable groups like such as children, the elderly, and those with heart and lung conditions. Half of the respondents were aware that inhaled pollutants can reach the bloodstream and organs.

Sources of Pollution: 88% of respondents identified road traffic as the main source of outdoor air pollution, followed by home domestic burning (30%), industrial activities (28%), and construction (27%). For indoor air pollution, 60% linked it to outdoor sources, such as vehicle emissions, with cleaning products (42%) and solid fuel burning (39%) also significant. A small percentage cited alternative sources (something else), like such as garden fires and poor ventilation.

Travel Habits: Over half of the respondents (54%) travel less than 4 miles to work, and 58% primarily use cars. Short journeys (<2 miles) are also dominated by car use (44%).

Air Quality Improvement: Walking more (67%) was the most common suggestion for improving air quality, while 69% of respondents do not use log burners or open fires at home.

Behavioural Change: Respondents voiced concerns about public health, the environment, urban planning, and quality of life. These insights will inform strategies to raise awareness, reduce air pollution exposure, and promote air quality information. However, further targeted surveys to obtain more additional input from younger populations (students) is recommended for a comprehensive understanding

Appendix G: Source Apportionment Assessment

This ‘Source Apportionment Assessment’ fulfils the requirements of the Local Air Quality Management (LAQM) process as set out in the Environment Act (2021), the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 and the relevant Policy and Technical Guidance documents.

Policy guidance (LAQM.PG22) requires a Local Authority to prepare an Air Quality Action Plan (AQAP) to ensure air quality standards or objectives are achieved in Air Quality Management Areas (AQMA). In order to develop an appropriate plan it is necessary to identify the sources contributing to the objective exceedances within the AQMA.

Source Apportionment Approach

Emissions Factor Toolkit

The source apportionment assessment has been undertaken generally following the process outlined in technical guidance. LAQM.TG22 (paragraph 7.111) advises that ‘source apportionment may be undertaken using a simple spreadsheet approach. For example, where road traffic emissions are the principal concern, the percentage contribution to total NOx emissions may be calculated using the appropriate emission factors.’ This approach has been adopted for the source apportionment assessment utilising Defra’s Emissions Factor Toolkit (EFT) v12.0.1.

Copies of the EFT input and outputs are provided below in Appendix J: Emissions Factor Toolkit – Source Apportionment.

Traffic and Speed Data

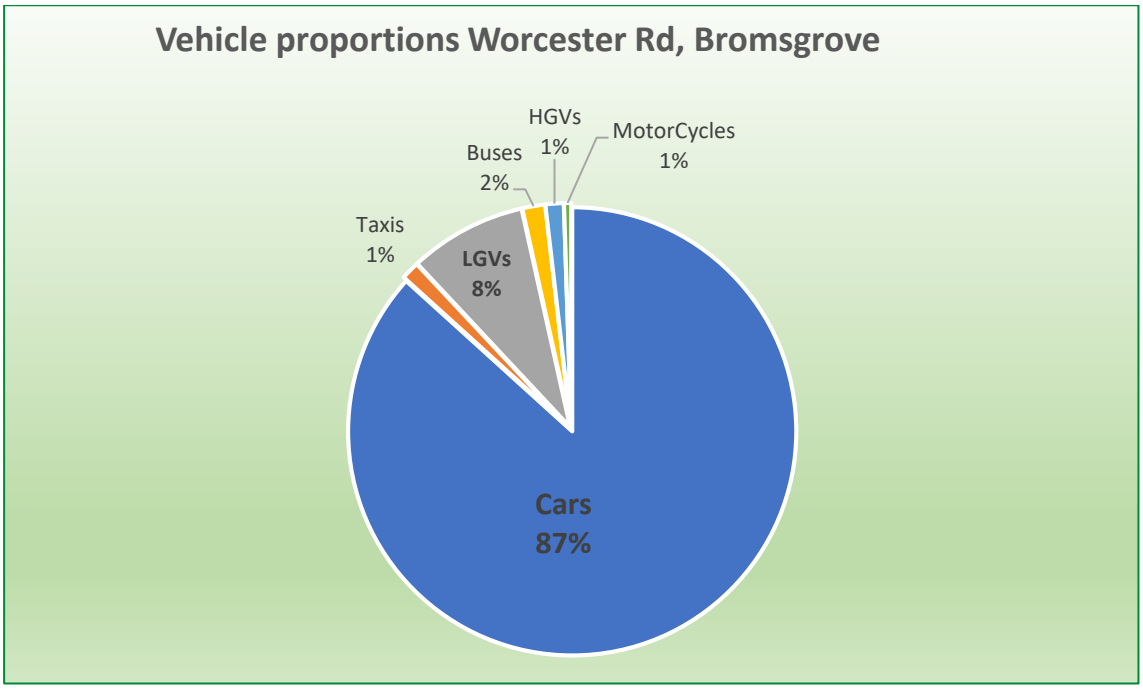
Total Traffic Surveys Ltd (TTS) were commissioned to undertake traffic counts and speed averages within the AQMA for the purposes of this source apportionment assessment.

TTS undertook 24-hour road traffic counts at a single location within the AQMA in March 2023. NB PC (peddle cycles) have not been included in the assessment as do not contribute towards emissions of air pollution.

Speed data was also recorded in March 2023 over a weekly period to provide a mean average for Northbound and Southbound traffic within the AQMA. The average speed data on each link (length of AQMA) has been incorporated into Emissions Factor Toolkit v12.0.1 to determine the percentage contribution from vehicles.

Appendix H: Traffic Data and Appendix I: Speed Data shows the traffic data and speed data recorded and utilised within this source apportionment assessment.

Figure G. 1 Summary of vehicle proportions – Worcester Road, Bromsgrove



Bus Fleet Data

Worcestershire County Council provided WRS with local bus fleet composition for Diamond Bus Group and First Bus Group who are the predominant service providers across the district. Additional research was undertaken to determine composition fleet services in the AQMA. The national Euro code compositions assumed in the EFT were amended accordingly to reflect the local circumstances providing a more

accurate EFT output. A copy of current fleet composition within the AQMA is provided below.

Table G.1 Local Bus Fleet

Eurocode	Numbers in combined fleet in AQMA	Proportion of Fleet
1Pre-Euro I (Euro 1)		0%
2Euro I (Euro1)		0%
3Euro II (Coaches) (Euro 2)		0%
4Euro III (Euro 3)		0%
5Euro IV (Euro 4)		0%
6Euro V_EGR (Euro 5)	15	32%
7Euro V_SCR (Euro 5)		0%
8Euro VI (Euro 6)	32	68%
9Euro II SCRRF (Euro 2)		0%
10Euro III SCRRF (Euro 3)		0%
11Euro IV SCRRF (Euro 4)		0%

Monitoring Data

In 2023, Bromsgrove District Council monitored annual mean nitrogen dioxide concentrations using passive diffusion tubes located across the district. Six diffusion tubes sites are located within the boundary of the Worcester Road, Bromsgrove AQMA. Plans showing the positions of diffusion tube monitoring locations is included in Figure 2.1 of the main report.

Table G.2 below shows the bias adjusted annual averages for nitrogen dioxide at the worst-case scenario monitoring location within the AQMA. This location has been used for the purposes of the source apportionment exercise.

Table G.2 Highest Annual Mean NO_2 Monitoring Results in the AQMA in 2023

Site ID	Site Name	X OS Grid Ref	Y OS Grid Ref	Distance to Relevant Exposure (m)	NO_2 Annual Mean Concentration ($\mu g/m^3$) in 2023
WR	14 Hanover Street	395702	270423	0.0	36.6

Background and Local Contributions

Technical guidance advises that determining '…the apportionment for NO_2 is not straightforward due to the non-linear relationship between the emissions of NO_2 and nitrous oxides (NOx). This is additionally complicated by the different proportions of NO_2 in the NOx emission for different sources, for example, petrol cars or diesel cars. The following advice therefore applies to NO_2 source apportionment:

Background contributions: the national maps will give the total background NO_2 concentration. This should be apportioned to regional and local background using the ratio of the background NOx concentrations attributable to these two sources, which are also available in the national maps; and

Local contributions: the local contribution to NO_2 is the difference between the total (measured or modelled) NO_2 and the total background NO_2. This is then apportioned to the local sources, for example, buses, HGVs, taxis, cars, using the relative contributions of these sources to the local NOx concentration.'

Regional and Total Background contributions of NOx and NO_2 for 2023, available from Defra website, have been used to calculate the contribution of local nitrogen dioxide for each relevant receptor (monitoring location) in the AQMA following the procedure laid out in LAQM.TG22 Box 7-5. The local contribution has then been apportioned to each vehicle class according to the results of the EFT. Calculations are presented below in Table F.3 and Table F.4 and the results summarised in Figure F.3 to Figure F.6 below.

Source Apportionment Results – Worcester Road, Bromsgrove

Table G.3 The local contribution apportioned to each vehicle class calculated for monitoring location WR in accordance with LAQM.TG22 Box 7-5

Box 7-5 calculation - Location: WR	Local Sources %	NO_2 µg/m^3	Total Emissions %
T-NO_2 (Total (Monitored) nitrogen dioxide)		**36.6**	
TB-NO_2 (Total Background nitrogen dioxide[1])		10.99456	
TB-NOx (Total Background nitrous oxides[1])		14.50689	
RB-NOx (Regional Background nitrous oxides[1])		11.445104	

Bromsgrove District Council

Box 7-5 calculation - Location: WR	Local Sources %	NO_2 µg/m^3	Total Emissions %
Step 1: **LB-NOx**[2] = TB-NOx – RB-NOx		3.061786	
Step2: **RB-NO_2**[3] = TB-NO_2 × (RB-NOx / TB-NOx)		**8.67407712**	23.70%
Step2: **LB-NO_2**[4] = TB-NO_2 × (LB-NOx / TB-NOx)		**2.32048288**	6.34%
Step3: **L-NO_2**[5] **=** T-NO_2 – TB-NO_2		**25.60544**	
Step4: % of vehicles from EFT			
Petrol Cars (%)	8.56%	2.19	
Petrol Hybrid Petrol Cars (%)	0.21%	0.05	
Plug in Hybrid Petrol Cars (%)	0.05%	0.01	
Diesel Cars (%)	55.83%	14.30	
Diesel Hybrid Diesel Cars (%)	0.36%	0.09	
Total cars	**65.00%**	**16.64**	45.48%
Petrol Taxis	0.00%	0.00	
Petrol hybrid Taxis	0.02%	0.01	
Diesel Taxis	1.14%	0.29	
Taxis	**1.16%**	**0.30**	0.81%
Petrol LGVs (%)	0.05%	0.01	
Diesel LGVs (%)	13.45%	3.44	
Total LGVs	**13.50%**	**3.46**	9.44%
Rigid HGVs (%)	5.46%	1.40	
Artic HGVs (%)	0.60%	0.15	
Total HGVs	**6.07%**	**1.55**	4.24%
Buses (%)	9.38%	2.40	
Hybrid Buses (%)	0.14%	0.04	
Biogas Buses (%)	0.00%	0.00	
Coaches (%)	4.59%	1.17	
Hybrid Coaches (%)	0.09%	0.02	
Biogas Coaches (%)	0.00%	0.00	
Total Buses	**14.21%**	**3.64**	9.94%
Motorcycles (%)	**0.06%**	**0.02**	0.04%
	100.00%	25.61	100.00%

1) Data from Defra 2018 Background Maps for model year of 2023 for relevant local coordinates
2) Local Background nitrous oxides
3) Regional Background nitrogen dioxide contribution
4) Local Background nitrogen dioxide contribution
5) Local sources nitrogen dioxide contribution

Figure G.2 Total NO2 sources in Worcester Road, Bromsgrove AQMA

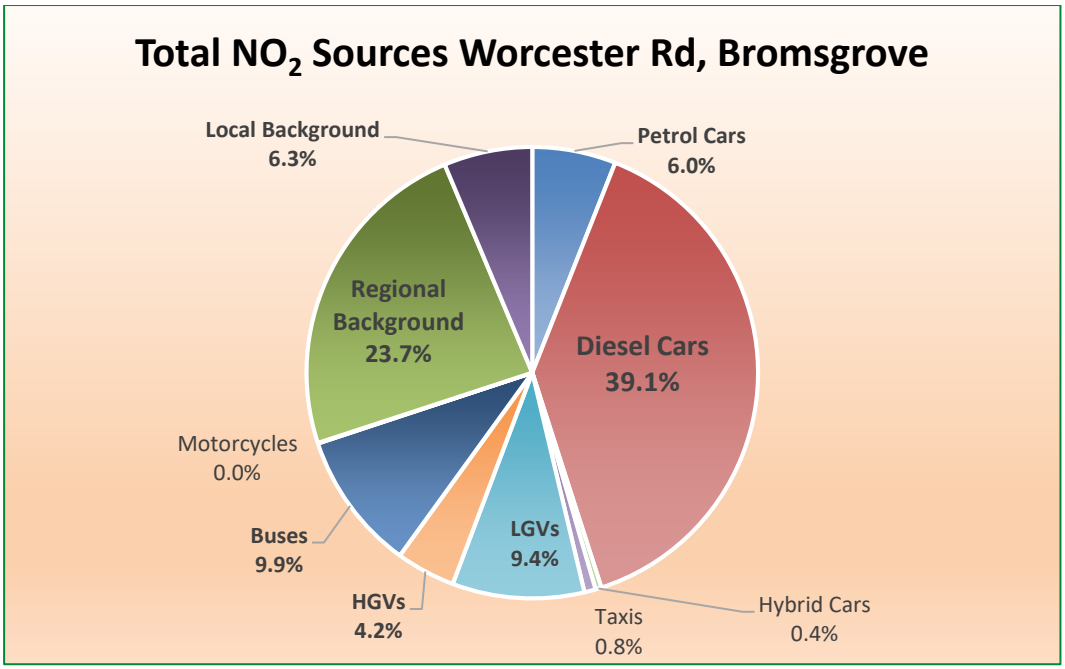


Table G.3 and Figure G.2 above demonstrate that the main contributors of total emissions within the Worcester Road, Bromsgrove AQMA are Cars with 45.48% of emissions followed by Regional and Local Background emissions totalling 30.04%. Buses and LGVS are the next biggest contributors with similar amounts 9.94% and 9.44% respectively.

As the Local Authority is unable to influence Regional Background concentrations and Local Background concentrations are predominately a result of traffic sources on other local roads, it is more useful to consider the source apportionment of the local traffic sources in isolation for future improvement actions. Figure F.4 below demonstrates the local traffic contribution (i.e. minus the Background contributions) broken down further into petrol and diesel classifications in the EFT.

Figure G.3 Local NO2 sources in Worcester Road, Bromsgrove AQMA

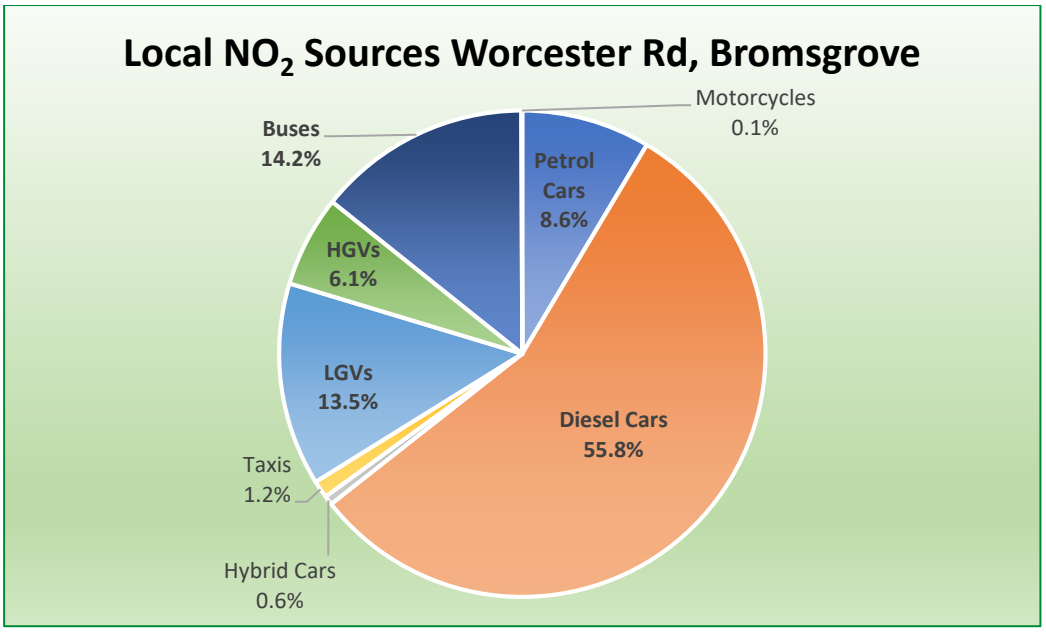


Table G.3 and Figure G.3 above demonstrate that the main contributors of emissions from local sources within the Worcester Road, Bromsgrove AQMA are diesel cars with 55.8% of emissions followed by Buses at 14.2% and LGVs with 13.5%. Petrol Cars 8.6% and HGVs 6.1% also make up sizeable contributions.

Air Quality Improvements Required

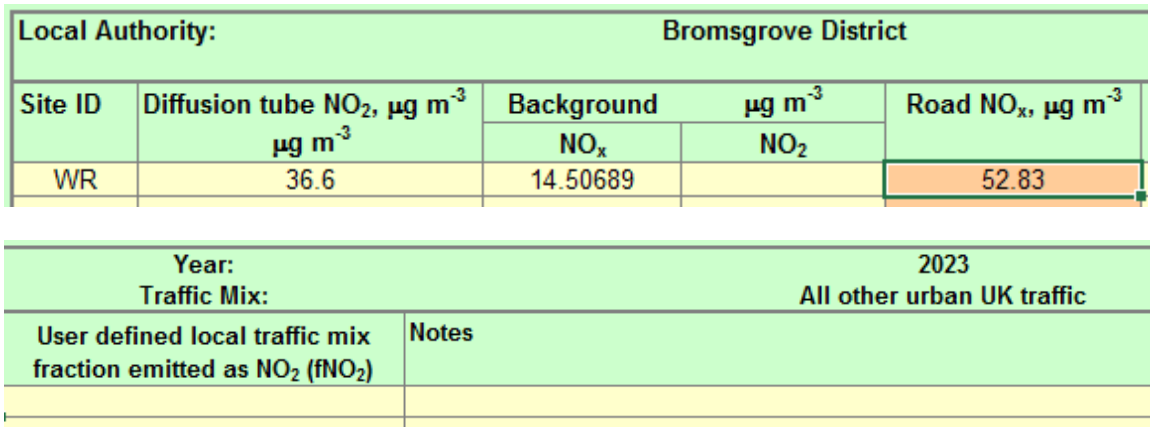
The degree of improvement required in order for the annual mean objective for nitrogen dioxide to be achieved is the difference between the highest measured or predicted concentration and the objective level.

LAQM.TG22 advises: 'Where NO_2 monitoring is completed using diffusion tubes, to account for the inherent uncertainty associated with the monitoring method, it is recommended that revocation of an AQMA should be considered following three consecutive years of annual mean NO_2 concentrations being lower than 36µg/m^3 (i.e. within 10% of the annual mean NO_2 objective).'

Therefore air quality improvements to achieve sustained compliance below current air quality objectives have been calculated to achieve 36µg/m^3 in the AQMA. The highest nitrogen dioxide concentration at a representative location in Worcester Road Bromsgrove, AQMA in 2023 is 36.6µg/m^3 at monitoring location WR, requiring a reduction of 0.6µg/m^3 for -10%AQO to be achieved.

However technical guidance advises that in terms of the reduction in emissions required it is more useful to consider nitrogen oxides (NOx). Therefore the road NOx reduction required for compliance with -10%AQO in the AQMA has been calculated in accordance with LAQM.TG22 Box 7-6 utilising Defra's NOx to NO_2 Conversion Spreadsheet v8.1. Calculations are shown below.

Figure G.4 Defra's NOx to NO2 Conversion Spreadsheet v8.1 for LAQM.TG22 Box 7-6 calculation at representative monitoring location



Local Authority:		Bromsgrove District		
Site ID	Diffusion tube NO_2, µg m^{-3} µg m^{-3}	Background	µg m^{-3}	Road NO_x, µg m^{-3}
		NO_x	NO_2	
WR	36.6	14.50689		52.83

Year:	2023
Traffic Mix:	All other urban UK traffic
User defined local traffic mix fraction emitted as NO_2 (fNO_2)	Notes

Table G.4 Box 7-6 Calculation for Worcester Road, Bromsgrove AQMA

Box 7.6 Calculation – WG(B)	NOx or NO_2 µg/m^3	Reduction required %
Step1 Total NOx	66.33	
Step2 TB-NOx (Total Background nitrous oxides[1])	14.51	
Step3 Total Road NOx (Local Sources)	51.82	
Step4 NOx equivalent for NO_2 36µg/m^3	**50.24**	
Step5 NOx reduction required for 36µg/m^3	**1.58**	**3.05%**
Local NO_2 reduction required for 36µg/m^3	**0.78**	

Table G.5 Emission reduction required

Location	Emission Reductions Required to Meet -10% Objective (NO_2)	All Vehicle Reduction to Meet -10% Objective (NOx)	Highest Roadside Contributor	2nd Roadside Contributor	Single Vehicle Reduction to Achieve Objective
Worcester Road Bromsgrove	0.78	3.05%	Diesel Cars – 55.80%	Buses – 14.20%	Cars 5% or Buses/LGV 25%

The assessment indicates:

- Reducing total vehicle emissions from all vehicle types by 5% or targeting a 5% reduction in cars or 25% of Buses or LGVs would be potentially effective measures for achieving -10%AQO in Worcester Road, Bromsgrove AQMA.

Appendix H: Traffic Data

TOTAL TRAFFIC SURVEYS LTD
DATA COLLECTION

Job Title:	**Worcestershire Counts**
Job Number:	**TTS-1529-Mar**
Survey Date:	**Tuesday 21st March 2023**
Survey Type:	**Manual Classified Counts**

Site: 8

Location: A4091 Worcester Rd, Bromsgrove

	Northbound									Southbound								
Time	PC	M C	Car	Taxi	LGV	OGV1	OGV2	PSV	Total	PC	M C	Car	Taxi	LGV	OGV1	OGV2	PSV	Total
00:00	0	0	3	0	1	0	0	0	4	0	0	5	0	0	0	0	0	5
00:15	0	0	8	0	0	0	0	0	8	0	0	2	0	1	0	0	0	3
00:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
00:45	0	0	1	0	0	0	0	0	1	0	0	3	0	0	0	0	0	3
H/Tot	0	0	12	0	1	0	0	0	13	0	0	10	0	1	0	0	0	11
01:00	0	0	2	0	1	0	0	0	3	0	0	1	0	1	0	0	0	2
01:15	0	0	2	0	0	0	0	0	2	0	0	1	0	0	0	0	0	1
01:30	0	0	1	0	1	0	0	0	2	0	0	3	0	0	0	0	0	3
01:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/Tot	0	0	5	0	2	0	0	0	7	0	0	5	0	1	0	0	0	6
02:00	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
02:15	0	0	2	0	0	0	0	0	2	0	0	2	0	0	1	0	0	3
02:30	0	0	0	0	1	0	0	0	1	0	0	2	0	0	0	0	0	2
02:45	0	0	1	0	0	0	0	0	1	0	0	1	0	1	0	0	0	2
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03:00	0	0	3	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0
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03:30	0	0	1	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0
03:45	0	0	2	0	2	0	0	0	4	0	0	1	0	0	0	0	0	1
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04:30	0	0	6	0	0	0	1	0	7	0	0	3	0	0	0	0	0	3
04:45	1	0	9	0	1	0	0	0	11	1	0	9	0	2	2	0	0	14
H/Tot	1	0	19	0	3	0	1	0	24	1	0	17	0	3	2	0	0	23
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05:45	0	0	19	0	0	0	1	0	20	0	0	27	0	5	1	0	0	33
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06:30	0	1	42	0	7	2	0	2	54	0	1	52	0	7	2	0	2	64
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07:30	0	1	116	1	12	2	2	2	136	0	1	149	2	12	2	0	5	171
07:45	1	0	144	0	18	3	1	5	172	2	0	195	1	16	2	1	2	219
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Bromsgrove District Council

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16:30	0	0	148	1	18	0	0	1	168	0	0	167	0	18	1	0	1	187
16:45	0	1	138	4	17	0	0	3	163	0	1	176	8	10	0	0	1	196
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17:30	0	1	161	4	9	0	0	7	182	0	3	164	1	10	1	0	9	188
17:45	0	3	150	1	10	0	0	3	167	0	3	142	4	10	1	0	1	161
H/Tot	1	4	604	11	39	0	0	13	672	0	7	671	9	49	4	0	16	756
18:00	0	0	139	4	11	0	0	1	155	0	2	163	2	6	0	0	0	173
18:15	0	1	111	1	9	0	0	2	124	0	3	148	2	6	0	0	1	160
18:30	5	0	97	0	7	0	0	2	111	0	0	123	1	4	0	0	1	129
18:45	1	1	115	0	7	0	0	1	125	0	0	139	0	11	0	0	0	150
H/Tot	6	2	462	5	34	0	0	6	515	0	5	573	5	27	0	0	2	612
19:00	0	1	122	2	2	0	0	0	127	0	1	124	1	3	0	0	0	129
19:15	0	1	128	0	7	0	0	1	137	1	0	125	1	6	0	0	0	133
19:30	1	0	98	0	3	0	0	1	103	1	2	108	0	7	0	0	1	119
19:45	0	1	60	0	6	0	0	0	67	0	0	95	3	4	0	0	0	102
H/Tot	1	3	408	2	18	0	0	2	434	2	3	452	5	20	0	0	1	483
20:00	0	1	87	0	7	0	0	0	95	0	1	70	1	4	0	0	1	77
20:15	1	0	82	1	3	0	0	1	88	0	0	78	0	2	0	0	0	80
20:30	0	1	61	0	2	1	0	0	65	0	0	40	0	6	0	0	1	47
20:45	1	0	34	1	1	0	0	0	37	0	0	51	0	2	0	0	0	53
H/Tot	2	2	264	2	13	1	0	1	285	0	1	239	1	14	0	0	2	257
21:00	0	0	68	0	4	0	0	0	72	0	1	48	0	0	0	0	0	49
21:15	0	1	57	0	5	0	0	0	63	0	0	49	0	1	0	0	0	50
21:30	0	0	40	0	1	0	0	0	41	0	0	49	0	0	0	0	0	49
21:45	0	1	22	0	4	0	0	1	28	0	0	53	0	4	0	0	0	57
H/Tot	0	2	187	0	14	0	0	1	204	0	1	199	0	5	0	0	0	205
22:00	0	0	40	0	2	0	0	1	43	0	0	34	0	2	0	0	1	37
22:15	0	0	41	0	0	0	0	0	41	0	1	34	0	0	0	0	0	35
22:30	0	0	21	0	1	0	0	0	22	0	0	26	0	1	0	0	0	27
22:45	0	0	16	0	1	0	0	0	17	0	0	14	0	1	0	0	0	15
H/Tot	0	0	118	0	4	0	0	1	123	0	1	108	0	4	0	0	1	114
23:00	0	0	9	0	0	0	0	0	9	0	0	10	0	0	0	0	0	10
23:15	0	1	10	0	1	0	0	0	12	0	0	10	0	0	0	0	0	10
23:30	0	0	7	0	0	0	0	0	7	0	0	14	0	0	0	0	0	14
23:45	0	1	5	0	1	0	0	0	7	0	0	4	0	0	0	0	0	4
H/Tot	0	2	31	0	2	0	0	0	35	0	0	38	0	0	0	0	0	38
Total	**26**	**40**	**7081**	**97**	**701**	**88**	**17**	**136**	**8186**	**24**	**48**	**7552**	**125**	**730**	**103**	**15**	**142**	**8739**

Appendix I: Speed Data

Figure I.1 Location of Automatic Traffic Counter

Table I.1 Worcester Road, Bromsgrove - Northbound Summary

* Virtual Week (1)																																				
Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Mean	Vpp	>PSL	>PSL%	>SL1	>SL1%	>SL2	>SL2%	Mean	Vpp
<--		1	2	3	4	5	6	7	8	9	10	11		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75			85	30	30	30	30	30	30		85
														10	15	20	25	30	35	40	45	50	55	60	65	70	75	80											
Mon	7633	7	30	4665	2721	150	4	3	23	0	6	24		550	1048	1767	3174	979	101	11	2	0	0	0	0	0	0	0	0	19.7	24.9	115	1.507	115	1.507	115	1.507	19.7	24.9
Tue	7992	10	34	4585	3101	190	8	2	31	1	7	23		414	1113	2116	3194	1035	102	11	0	0	4	0	0	0	0	0	0	19.9	24.9	120	1.502	120	1.502	120	1.502	19.9	24.9
Wed	7984	8	32	4640	3050	187	11	3	25	0	10	18		751	1338	1805	3058	893	119	8	2	1	1	5	2	0	0	0	0	19.1	24.6	139	1.741	139	1.741	139	1.741	19.1	24.6
Thu	7859	7	28	4778	2761	196	20	3	25	0	7	34		802	1366	1792	2878	907	98	12	3	0	0	0	1	0	0	0	0	18.8	24.7	114	1.451	114	1.451	114	1.451	18.8	24.7
Fri	8486	12	35	5399	2798	171	9	5	28	1	7	21		846	1348	2112	3132	942	92	11	2	0	0	1	0	0	0	0	0	18.8	24.5	106	1.249	106	1.249	106	1.249	18.8	24.5
Sat	7649	2	28	4627	2860	80	4	0	28	0	3	17		487	1051	1908	3178	905	106	11	1	1	0	0	0	1	0	0	0	19.7	24.7	120	1.569	120	1.569	120	1.569	19.7	24.7
Sun	6044	11	37	3554	2376	36	6	2	11	0	3	8		113	425	1002	3088	1274	122	17	0	0	1	0	0	0	0	1	0	22	26.1	142	2.349	142	2.349	142	2.349	22	26.1
--	**53647**	**57**	**224**	**32248**	**19667**	**1010**	**62**	**18**	**171**	**2**	**43**	**145**		**3963**	**7689**	**12502**	**21702**	**6935**	**740**	**81**	**10**	**2**	**6**	**6**	**3**	**1**	**0**	**0**		**19.6**	**24.9**	**856**	**1.596**	**856**	**1.596**	**856**	**1.596**	**19.6**	**24.9**
Vehicles = 53647																																				
Posted speed limit = 30 mph, Exceeding = 856 (1.596%), Mean Exceeding = 33.18 mph																																				
Maximum = 99.2 mph, Minimum = 5.0 mph, Mean = 19.6 mph																																				
85% Speed = 24.94 mph, 95% Speed = 27.40 mph, Median = 20.69 mph																																				
10 mph Pace = 16 - 26, Number in Pace = 35093 (65.41%)																																				
Variance = 32.65, Standard Deviation = 5.71 mph																																				
* Grand Total																																				
Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Mean	Vpp	>PSL	>PSL%	>SL1	>SL1%	>SL2	>SL2%	Mean	Vpp
<--		1	2	3	4	5	6	7	8	9	10	11		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75			85	30	30	30	30	30	30		85
														10	15	20	25	30	35	40	45	50	55	60	65	70	75	80											
--	**53647**	**57**	**224**	**32248**	**19667**	**1010**	**62**	**18**	**171**	**2**	**43**	**145**		**3963**	**7689**	**12502**	**21702**	**6935**	**740**	**81**	**10**	**2**	**6**	**6**	**3**	**1**	**0**	**0**		**19.6**	**24.9**	**856**	**1.596**	**856**	**1.596**	**856**	**1.596**	**19.6**	**24.9**
Vehicles = 53647																														31.5kph									

Table I.2 Worcester Road, Bromsgrove - Southbound Summary

* Virtual Week (1)																																				
Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Mean	Vpp	>PSL	>PSL%	>SL1	>SL1%	>SL2	>SL2%	Mean	Vpp
<--		1	2	3	4	5	6	7	8	9	10	11		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75			85	30	30	30	30	30	30		85
														10	15	20	25	30	35	40	45	50	55	60	65	70	75	80											
Mon	8305	13	32	4668	3328	198	8	3	7	0	16	32		216	489	1671	3968	1751	190	18	0	1	0	0	0	0	0	0	0	21.8	26.2	210	2.529	210	2.529	210	2.529	21.8	26.2
Tue	8515	15	40	4562	3638	212	11	1	7	1	5	23		194	428	1911	4097	1662	194	20	4	2	1	0	0	0	0	0	0	21.8	26.1	223	2.619	223	2.619	223	2.619	21.8	26.1
Wed	8565	19	34	4758	3476	217	13	2	10	1	7	28		156	505	1987	4061	1639	190	20	2	1	2	0	1	0	0	0	0	21.7	25.9	217	2.534	217	2.534	217	2.534	21.7	25.9
Thu	8434	8	40	4814	3299	210	20	1	12	0	8	22		138	504	1977	3994	1619	179	17	6	0	0	0	0	0	0	0	0	21.7	26.1	202	2.395	202	2.395	202	2.395	21.7	26.1
Fri	9411	15	42	5358	3738	198	15	1	9	0	11	24		122	493	2292	4632	1644	197	22	8	0	0	1	0	0	0	0	0	21.7	25.8	228	2.423	228	2.423	228	2.423	21.7	25.8
Sat	8290	11	30	4442	3680	78	6	3	5	0	7	28		70	283	1941	4149	1637	170	30	7	2	0	0	0	1	0	0	0	22.1	26.1	210	2.533	210	2.533	210	2.533	22.1	26.1
Sun	6192	14	41	3279	2811	26	3	2	4	0	2	10		17	80	737	3074	1990	258	28	6	0	1	0	0	0	0	0	0	23.9	27.4	294	4.748	294	4.748	294	4.748	23.9	27.4
--	**57712**	**95**	**259**	**31881**	**23970**	**1139**	**76**	**13**	**54**	**2**	**56**	**167**		**913**	**2782**	**12516**	**27975**	**11942**	**1378**	**155**	**33**	**6**	**4**	**1**	**1**	**1**	**0**	**0**		**22**	**26.3**	**1584**	**2.745**	**1584**	**2.745**	**1584**	**2.745**	**22**	**26.3**
Vehicles = 57712																																				
Posted speed limit = 30 mph, Exceeding = 1584 (2.745%), Mean Exceeding = 32.64 mph																																				
Maximum = 99.2 mph, Minimum = 5.0 mph, Mean = 22.0 mph																																				
85% Speed = 26.28 mph, 95% Speed = 28.74 mph, Median = 22.26 mph																																				
10 mph Pace = 18 - 28, Number in Pace = 45190 (78.30%)																																				
Variance = 20.59, Standard Deviation = 4.54 mph																																				
* Grand Total																																				
Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Mean	Vpp	>PSL	>PSL%	>SL1	>SL1%	>SL2	>SL2%	Mean	Vpp
<--		1	2	3	4	5	6	7	8	9	10	11		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75			85	30	30	30	30	30	30		85
														10	15	20	25	30	35	40	45	50	55	60	65	70	75	80											
--	**57712**	**95**	**259**	**31881**	**23970**	**1139**	**76**	**13**	**54**	**2**	**56**	**167**		**913**	**2782**	**12516**	**27975**	**11942**	**1378**	**155**	**33**	**6**	**4**	**1**	**1**	**1**	**0**	**0**		**22**	**26.3**	**1584**	**2.745**	**1584**	**2.745**	**1584**	**2.745**	**22**	**26.3**
Vehicles = 57712																														35.4kph									

Appendix J: Emissions Factor Toolkit – Source Apportionment

Figure J.1 EFT Input – Source Apportionment

Primary Inputs		Pollutants	Selected	Standard Outputs	Selected	Additonal Outputs	Selected
Area	England (not London)	NO_x	Y	Air Quality Modelling (g/km/s)		Breakdown by Vehicle	Y
Year	2023	PM_{10}		Emissions Rates (g/km)	Y	Source Apportionment	Y
Traffic Format	Detailed Option 2	$PM_{2.5}$		Annual Link Emissions		PM by Source	
All must be selected		CO_2				Primary NO_2 Fraction	
						Export Outputs	

SourceID	Road Type	Traffic Flow	% Car	% Taxi (black cab)	% LGV	% Rigid HGV	% Artic HGV
Worcester Road Nor	Urban (not London)	8160	86.77696078	1.18872549	8.590686275	1.078431373	0.208333333
Worcester Road Sou	Urban (not London)	8715	86.6551922	1.434308663	8.376362593	1.181870338	0.17211704
Worcester Rd Comb	Urban (not London)	16875	86.71407407	1.315555556	8.48	1.131851852	0.18962963

Advanced Options	Selected
Bespoke Base Fleets	
Bespoke Euro Fleet	Y
Fleet Projection Tool	

Click the button to:

Run EFT

Clear Input Data

% Bus and Coach	% Motorcycle	Speed(kph)	No of Hours	Link Length (km)	% Gradient	Flow Direction	% Load
1.666666667	0.490196078	19.6	24				
1.629374641	0.550774527	22	24				
1.647407407	0.521481481	20.8	24				

Figure J.2 Bespoke Euro Fleet – Source Apportionment

Populate with Defaults | OK

Default Euro Proportions 2023 - England (not London)

Cars	Pre-Euro 1	Euro 1	Euro 2	Euro 3	Euro 4	Euro 5	Euro 6 a/b/c	Euro 6 d-temp	Euro 6 d
Conventional Petrol	-	-	-	0.02	0.10	0.23	0.31	0.16	0.19
Hybrid Petrol				0.00	0.02	0.11	0.23	0.21	0.43
Plugin Hybrid Petrol					0.00	0.02	0.16	0.14	0.68
Conventional Diesel	-	-	-	0.01	0.10	0.34	0.37	0.09	0.08
Hybrid Diesel				0.00	0.00	0.01	0.10	0.23	0.65

LGVs	Pre-Euro 1	Euro 1	Euro 2	Euro 3	Euro 4	Euro 5	Euro 6_1	Euro 6_2	Euro 6_3
Petrol LGV	-	-	-	0.03	0.08	0.12	0.07	0.21	0.50
Diesel LGV	-	-	-	0.01	0.06	0.19	0.12	0.26	0.36
Petrol Taxi	-	-	-	0.03	0.08	0.12	0.07	0.21	0.50
Diesel Taxi	-	-	-	0.01	0.06	0.19	0.12	0.26	0.36

Heavy Duty Vehicles	Pre-Euro I	Euro I	Euro II	Euro III	Euro IV	Euro V_EGR	Euro V_SCR	Euro VI	Euro II SCRRF	Euro III SCRRF	Euro IV SCRRF	Euro V SCRRF to EGR
Rigid HGVs	-	-	0.01	0.03	0.02	0.03	0.08	0.84	-	-	-	-
Artic HGVs	-	-	0.00	0.00	0.00	0.01	0.03	0.96	-	-	-	-
Conventional Buses	-	-	0.01	0.03	0.04	0.05	0.15	0.72	-	-	-	-
Hybrid Buses					-	0.20	0.59	0.21				
Conventional Coaches	-	-	0.01	0.03	0.04	0.05	0.15	0.72	-	-	-	-
Hybrid Coaches					-	0.20	0.59	0.21				

User Euro Proportions 2023 - England (not London)

Cars	Pre-Euro 1	Euro 1	Euro 2	Euro 3	Euro 4	Euro 5	Euro 6 a/b/c	Euro 6 d-temp	Euro 6 d	
Conventional Petrol	-	-	-	0.02	0.10	0.23	0.31	0.16	0.19	OK
Hybrid Petrol				0.00	0.02	0.11	0.23	0.21	0.43	OK
Plugin Hybrid Petrol					0.00	0.02	0.16	0.14	0.68	OK
Conventional Diesel	-	-	-	0.01	0.10	0.34	0.37	0.09	0.08	OK
Hybrid Diesel				0.00	0.00	0.01	0.10	0.23	0.65	OK

LGVs	Pre-Euro 1	Euro 1	Euro 2	Euro 3	Euro 4	Euro 5	Euro 6_1	Euro 6_2	Euro 6_3	
Petrol LGV	-	-	-	0.03	0.08	0.12	0.07	0.21	0.50	OK
Diesel LGV	-	-	-	0.01	0.06	0.19	0.12	0.26	0.36	OK
Petrol Taxi	-	-	-	0.03	0.08	0.12	0.07	0.21	0.50	OK
Diesel Taxi	-	-	-	0.01	0.06	0.19	0.12	0.26	0.36	OK

Heavy Duty Vehicles	Pre-Euro I	Euro I	Euro II	Euro III	Euro IV	Euro V_EGR	Euro V_SCR	Euro VI	Euro II SCRRF	Euro III SCRRF	Euro IV SCRRF	Euro V SCRRF to EGR	
Rigid HGVs	-	-	0.01	0.03	0.02	0.03	0.08	0.84	-	-	-	-	OK
Artic HGVs	-	-	0.00	0.00	0.00	0.01	0.03	0.96	-	-	-	-	OK
Conventional Buses	-	-	-	-	-	0.32	-	0.68	-	-	-	-	OK
Hybrid Buses					-	0.20	0.59	0.21					OK
Conventional Coaches	-	-	0.01	0.03	0.04	0.05	0.15	0.72	-	-	-	-	OK
Hybrid Coaches					-	0.20	0.59	0.21					OK

Default Vehicle Size Classes 2023 - England (not London)

	<1400	1400-2000	>2000
Petrol Car	0.59	0.32	0.09
Diesel Car	0.11	0.60	0.28
	N1 (I)	N1 (II)	N1 (III)
Petrol LGV	0.17	0.21	0.62
Diesel LGV	0.06	0.26	0.68

	3.5-7.5 t	7.5-12 t	12-14 t	14-20 t	20-26 t	26-28 t	28-32 t	>32 t
Rigid HGV	0.23	0.05	0.02	0.12	0.18	0.11	0.23	0.06

	14-20 t	20-28 t	28-34 t	34-40 t	40-50 t
Artic HGV	0.01	0.02	0.01	0.10	0.86

	Midi <=15 t	Standard 15 - 18 t	Articulated >18 t
Buses	0.31	0.69	-

	Standard <=18 t	Articulated >18 t
Coaches	0.50	0.50

User Vehicle Size Class 2023 - England (not London)

	<1400	1400-2000	>2000	
Petrol Car	0.59	0.32	0.09	OK
Diesel Car	0.11	0.60	0.28	OK
	N1 (I)	N1 (II)	N1 (III)	
Petrol LGV	0.17	0.21	0.62	OK
Diesel LGV	0.06	0.26	0.68	OK

	3.5-7.5 t	7.5-12 t	12-14 t	14-20 t	20-26 t	26-28 t	28-32 t	>32 t	
Rigid HGV	0.23	0.05	0.02	0.12	0.18	0.11	0.23	0.06	OK

	14-20 t	20-28 t	28-34 t	34-40 t	40-50 t	
Artic HGV	0.01	0.02	0.01	0.10	0.86	OK

	Midi <=15 t	Standard 15 - 18 t	Articulated >18 t	
Buses	0.31	0.69	-	OK

	Standard <=18 t	Articulated >18 t	
Coaches	0.50	0.50	OK

Figure J.3 EFT Output – Source Apportionment

Source Name	Pollutant Name	All Vehicles (g/km)	All LDVs (g/km)	All HDVs (g/km)	Petrol Cars (g/km)	Petrol Hybrid Cars (g/km)	Petrol Plugin Hybrid Cars (g/km)	Diesel Cars (g/km)	Diesel Hybrid Cars (g/km)	Electric Cars (g/km)	Petrol Taxis (g/km)
Worcester Road Northbound	NOx	2,847.07143	2,255.64796	591.42347	240.53625	5.79293	1.33586	1,581.94116	10.17032	-	0.00739
Worcester Road Southbound	NOx	2,883.29063	2,311.98092	571.30970	250.04226	6.01808	1.38670	1,616.42638	10.39526	-	0.00917
Worcester Rd Combined	NOx	5,729.59774	4,567.80834	1,161.78940	490.62290	11.81167	2.72269	3,198.72758	20.56716	-	0.01659

Petrol Hybrid Taxis (g/km)	Diesel Taxis (g/km)	Electric Taxi (g/km)	Petrol LGVs (g/km)	Petrol Hybrid LGVs (g/km)	Petrol Plugin Hybrid LGVs (g/km)	Diesel LGVs (g/km)	Electric LGVs (g/km)	Rigid HGVs (g/km)	Rigid Electric HGVs (g/km)	Artic HGVs (g/km)	Artic Electric HGVs (g/km)
0.58583	28.89710	-	1.40110	-	-	383.40570	-	151.62060	-	19.39754	-
0.72480	36.16465	-	1.43831	-	-	387.56987	-	161.08693	-	15.39706	-
1.31333	65.13524	-	2.83912	-	-	770.65765	-	313.06953	-	34.58385	-

Conventional Buses (g/km)	Hybrid Buses (g/km)	Electric Buses (g/km)	Biogas Buses (g/km)	Conventional Coaches (g/km)	Hybrid Coaches (g/km)	Electric Coaches (g/km)	Biogas Coaches (g/km)	TfL Conventional Buses (g/km)	TfL Hybrid Buses (g/km)	TfL Electric Buses (g/km)	TfL Biogas Buses (g/km)	Motorcycles (g/km)
277.83020	4.13534	-	0.11472	135.58660	2.69385	-	0.04461	-	-	-	-	1.57433
260.46698	3.93265	-	0.11978	127.73548	2.52424	-	0.04658	-	-	-	-	1.80543
537.70934	8.05721	-	0.23450	262.83636	5.20743	-	0.09119	-	-	-	-	3.39440

Appendix K: Modelled Measures

Measures supporting transition to Electric Vehicle Parc

Figure K.1 Summary Forecast Data from NEVIS

	Petrol Cars (g/km)	Diesel Cars (g/km)	Taxis (g/km)	Petrol LGVs (g/km)	Diesel LGVs (g/km)	Rigid HGVs (g/km)	Artic HGVs (g/km)	Buses/Coaches (g/km)	Motorcycles (g/km)	Full Hybrid Petrol Cars (g/km)	Plug-In Hybrid Petrol Cars (g/km)
2023 Q1 Bromsgrove	58.57%	33.10%	0.00%	3.12%	95.52%	0.00%	0.00%	0.00%	0.00%	0.00%	1.58%
2023 Q1 County	57.88%	34.97%	0.00%	3.66%	95.09%	0.00%	0.00%	0.00%	0.00%	0.00%	1.31%
2023 Avg	**58.22%**	**34.03%**	**0.00%**	**3.39%**	**95.30%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**1.44%**
2029 Low	48.96%	28.63%	0.00%	2.99%	75.06%	0.00%	0.00%	0.00%	0.00%	0.00%	2.36%
2029 Medium	43.70%	25.50%	0.00%	2.77%	69.39%	0.00%	0.00%	0.00%	0.00%	0.00%	3.01%
2029 High	39.49%	23.08%	0.00%	2.57%	64.32%	0.00%	0.00%	0.00%	0.00%	0.00%	8.15%

Full Hybrid Diesel Cars (g/km)	Battery EV Cars (g/km)	FCEV Cars (g/km)	E85 Bioethanol Cars (g/km)	LPG Cars (g/km)	Full Hybrid Petrol LGVs (g/km)	Plug-In Hybrid Petrol LGVs (g/km)	Battery EV LGVs (g/km)	FCEV LGVs (g/km)	E85 Bioethanol LGVs (g/km)	LPG LGVs (g/km)
0.00%	2.53%	0.00%	0.00%	4.23%	0.00%	0.07%	1.18%	0.00%	0.00%	0.12%
0.00%	2.18%	0.00%	0.00%	3.66%	0.00%	0.06%	1.05%	0.00%	0.00%	0.14%
0.00%	**2.35%**	**0.00%**	**0.00%**	**3.95%**	**0.00%**	**0.06%**	**1.11%**	**0.00%**	**0.00%**	**0.13%**
0.00%	17.42%	0.00%	0.00%	2.64%	0.00%	3.33%	18.24%	0.00%	0.00%	0.38%
0.00%	25.44%	0.00%	0.00%	2.35%	0.00%	0.00%	27.49%	0.00%	0.00%	0.35%
0.00%	27.15%	0.00%	0.00%	2.13%	0.00%	5.06%	27.74%	0.00%	0.00%	0.32%

Figure K.2 Vehicle Growth Factors, HGV Fleet Forecast, Local Taxi data

						Low	Medium	High		DfT avg increase in miles
Vehicle Growth	**2023**	**2029_L**	**2029_M**	**2029_H**		**Δ2023-2029**	**Δ2023-2029**	**Δ2023-2029**		**Δ2023-2029**
Cars Bromsgrove	61,990	60,360	60,460	60,270		-2.63%	-2.47%	-2.77%		4.03%
LGVs Bromsgrove	9,014	10,164	10,162	10,165		12.76%	12.74%	12.77%		21.46%
Cars County	365,708	369,090	369,910	369,160		0.92%	1.15%	0.94%		**Avg DfT vs Med Nevis**
LGVs County	54,975	57,459	57,388	57,339		4.52%	4.39%	4.30%		
					Avg Cars	-1.70%	-1.32%	-1.83%		1.36%
					Avg LGVs	8.64%	8.56%	8.53%		15.01%

			Taxis 2023 - Bromsgrove		Totals	%			Totals	%	Combined	
HGV EV 12/2023%	0.95%		HCVEH	DIESEL	66	82.5%	PHVEH	DIESEL	9	75.0%	75	81.5%
HGV Diesel 12/2023%	99.05%		HCVEH	ELECTR	3	3.8%	PHVEH	ELECTR	1	8.3%	4	4.3%
HGV EV 2029%	4.11%		HCVEH	HYBRID	10	12.5%	PHVEH	HYBRID	1	8.3%	11	12.0%
HGV Diesel 2029%	95.89%		HCVEH	LPG	1	1.3%					1	1.1%
			HCVEH	PETROL	0	0.0%	PHVEH	PETROL	1	8.3%	1	1.1%
					80				12		92	

Figure K.3 Proportion of Vehicle Types for EFT (All Vehicles) including fleet growth by 2029 – Worcester Road, Bromsgrove

Source Apportionment Volumes			Growth scenario 1			Growth scenario 2						For EFT All Vehicles			
Area	Worcs Road		Δ2023-2029 Medium NEVIS			Δ2023-2029 DfT avg increase in miles			Avg DfT vs Med Nevis				Nevis Med	DfT	Total vehicle types NEVIS	DFT
AADT	16875		**AADT**	16804.5		**AADT**	17780.75		**AADT**	17291.1605		% Petrol Car	6310.210113	6652.263983		
Year	2023											% Petrol Hybrid Car	0			
No. vehicles			**No. vehicles**			**No. vehicles**			**No. vehicles**			% Petrol Plugin Hybrid Car	434.313331	457.8558998	6744.523444	7110.12
Cars	14633		Cars	14439.97		Cars	15222.71		Cars	14831.3404		% Diesel Car	3682.579028	3882.198436		
Taxis	222		Taxis	222		Taxis	230.9466		Taxis	225.009059		% Diesel Hybrid Car	0	0		
LGVs	1431		LGVs	1553.529		LGVs	1738.093		LGVs	1645.81103		% Electric Car	3673.407142	3872.529375		
HGVs - Rigids (OGV1)	191		HGVs	191		HGVs	191		HGVs	191		% Petrol Taxi (black cab)	2.413043478	2.51028913		
HGVs - Artics (OGV2)	32		Arctic	32		Arctic	32		Arctic	32		% Petrol Hybrid Taxi (black	26.54347826	27.61318043		
Buses	278		Buses	278		Buses	278		Buses	278		% Diesel Taxi (black cab)	180.9782609	188.2716848		
Motorcylces	88		Motorcylc	88		Motorcylc	88		Motorcylces	88		% Electric Taxi (black cab)	9.652173913	10.04115652	219.5869565	228.4363
% vehicles			**% vehicles**			**% vehicles**			**% vehicles**			% Petrol LGV	43.06070808	48.17642656		
Cars	0.867140741		**Cars**	0.859292		**Cars**	0.856134		**Cars**	0.85774118		% Petrol Hybrid LGV	0	0		
Taxis	0.013155556		**Taxis**	0.013211		**Taxis**	0.012989		**Taxis**	0.01301295		% Petrol Plugin Hybrid LGV	0	0		
LGVs	0.0848		**LGVs**	0.092447		**LGVs**	0.097751		**LGVs**	0.09518222		% Diesel LGV	1077.945184	1206.007734		
HGVs - Rigids (OGV1)	0.011318519		HGVs - Rig	0.011366		HGVs - Rig	0.010742		HGVs - Rigid	0.01104611		% Electric LGV	427.1205048	477.8634758	1548.126397	1732.048
HGVs - Artics (OGV2)	0.001896296		HGVs - Art	0.001904		HGVs - Art	0.0018		HGVs - Artic	0.00185066		% Rigid HGV (Diesel)	183.1548183	183.1548183		
Buses	0.016474074		**Buses**	0.016543		**Buses**	0.015635		**Buses**	0.01607758		% Rigid HGV Electric	7.845181675	7.845181675	191	191
Motorcylces	0.005214815		**Motorcylc**	0.005237		**Motorcylc**	0.004949		**Motorcylces**	0.00508931		% Artic HGV (Diesel)	30.68562401	30.68562401		
												% Artic HGV Electric	1.314375987	1.314375987	32	32
												% Conventional Bus	278	278		
												% Motorcycle	88	88		
												% LPG Car	341.8742732	360.3724952		
												% LPG LGV	5.403065971	6.044963554		

Figure K.4 EFT Input – Measures supporting transition to Electric Vehicle Parc

Primary Inputs		Pollutants	Selected	Standard Outputs	Selected	Additonal Outputs	Selected	Advanced Options	Selected
Area	England (not London)	NO_x	Y	Air Quality Modelling (g/km/s)		Breakdown by Vehicle	Y	Bespoke Base Fleets	
Year	2029	PM_{10}		Emissions Rates (g/km)	Y	Source Apportionment	Y	Bespoke Euro Fleet	N
Traffic Format	All Vehicle Types	$PM_{2.5}$		Annual Link Emissions	Y	PM by Source		Fleet Projection Tool	
All must be selected		CO_2				Primary NO_2 Fraction	Y		
						Export Outputs			

SourceID	Road Type	Traffic Flow	% Petrol Car	% Petrol Hybrid Car	% Petrol Plugin Hybrid Car	% Diesel Car	% Diesel Hybrid Car	% Electric Car	% Petrol Taxi (black cab)
Worcs Rd NEVIS Me	Urban (not London)	16804.50031	37.55071557	0	2.584506074	21.91424298	0	21.85966304	0.014359507
Worcs Rd DfT	Urban (not London)	17780.7491	37.41273186	0	2.575009058	21.83371698	0	21.77933761	0.014118017

Click the button to:

Run EFT

Clear Input Data

% Electric Taxi (black cab)	% Petrol LGV	% Petrol Hybrid LGV	% Petrol Plugin Hybrid LGV	% Diesel LGV	% Electric LGV	% Rigid HGV (Diesel)	% Rigid HGV Electric	% Artic HGV (Diesel)	% Artic HGV Electric
0.05743803	0.2562451	0	0	6.41462206	2.541703098	1.08991529	0.046685	0.182603609	0.007821571
0.056472067	0.27094711	0	0	6.782659872	2.687532865	1.03007369	0.04412177	0.172577791	0.007392129

% Conventional Bus	% Hybrid Bus	% Electric Bus	% Biogas Bus	% Conventional Coach	% Hybrid Coach	% Electric Coach	% Biogas Coach	% Motorcycle
1.654318753	0	0	0	0	0	0	0	0.523669246
1.563488683	0	0	0	0	0	0	0	0.494917281

% Petrol Hybrid Taxi (black cab)	% Diesel Taxi (black cab)
0.157954582	1.076963061
0.155298184	1.058851254

% Biomethane Car	% LPG Car	% Biomethane LGV	% LPG LGV	% Biodiesel Rigid HGV	% Biodiesel Artic HGV	% Biodiesel Bus	% Biomethane Bus	% Biodiesel Coach	Speed(kph)	No of Hours	Link Length (km)	% Gradient	Flow Direction	% Load
0	2.03442094	0	0.032152494	0	0	0	0	0	20.8	24	0.77			
0	2.02675654	0	0.033997238	0	0	0	0	0	20.8	24	0.77			

Figure K.5 EFT Output - Measures supporting transition to Electric Vehicle Parc

Source Name	Pollutant Name	All Vehicles (g/km)	All LDVs (g/km)	All HDVs (g/km)	Petrol Cars (g/km)	Petrol Hybrid Cars (g/km)	Petrol Plugin Hybrid Cars (g/km)	Diesel Cars (g/km)	Diesel Hybrid Cars (g/km)	Electric Cars (g/km)	Petrol Taxis (g/km)	Petrol Hybrid Taxis (g/km)	Diesel Taxis (g/km)	Electric Taxi (g/km)	Petrol LGVs (g/km)
Worcs Rd NEVIS Med	NOx	2,360.26382	1,962.20648	398.05735	368.70035	-	2.50844	1,274.80285	-	-	0.06082	0.33376	42.39934	-	2.20505
Worcs Rd DfT	NOx	2,482.76334	2,084.70600	398.05735	388.68627	-	2.64441	1,343.90534	-	-	0.06327	0.34721	44.10803	-	2.46701

Petrol Hybrid LGVs (g/km)	Petrol Plugin Hybrid LGVs (g/km)	Diesel LGVs (g/km)	Electric LGVs (g/km)	Rigid HGVs (g/km)	Rigid Electric HGVs (g/km)	Artic HGVs (g/km)	Artic Electric HGVs (g/km)	Conventional Buses (g/km)	Hybrid Buses (g/km)	Electric Buses (g/km)	Biogas Buses (g/km)	Conventional Coaches (g/km)	Hybrid Coaches (g/km)
-	-	258.40841	-	154.52903	-	22.70065	-	220.82766	-	-	-	-	-
-	-	289.10796	-	154.52903	-	22.70065	-	220.82766	-	-	-	-	-

Electric Coaches (g/km)	Biogas Coaches (g/km)	TfL Conventional Buses (g/km)	TfL Hybrid Buses (g/km)	TfL Electric Buses (g/km)	TfL Biogas Buses (g/km)	Motorcycles (g/km)	Bioethanol Cars (g/km)	LPG Cars (g/km)	Bioethanol LGVs (g/km)	LPG LGVs (g/km)	Biodiesel Rigid HGVs (g/km)	Biodiesel Artic HGVs (g/km)	Biodiesel Buses (g/km)	Biomethane Buses (g/km)	Biodiesel Coaches (g/km)
-	-	-	-	-	-	2.05169	-	10.61025	-	0.12554	-	-	-	-	-
-	-	-	-	-	-	2.05169	-	11.18435	-	0.14045	-	-	-	-	-

Figure K.6 Calculating Impact - Measures supporting transition to Electric Vehicle Parc

Source apportionment 2023									
Source Name	**All Vehicles (g/km)**	**All LDVs (g/km)**	**All HDVs (g/km)**	**Total Cars**	**Total Petrol**	**Total diesel Cars**	**Total LGVs**	**Total Taxis**	**Total HGVs**
Worcester Rd Combined	5,602.42638	4,567.80834	1,034.61804	3,724.45200	505.15726	3,219.29474	773.49677	66.46517	347.65337

Ev Eft 2029									
Source Name	**All Vehicles (g/km)**	**All LDVs (g/km)**	**All HDVs (g/km)**	**Total Cars**	**Total Petrol**	**Total diesel Cars**	**Total LGVs**	**Total Taxis**	**Total HGVs**
Worcs Rd NEVIS Med	2,360.26382	1,962.20648	398.05735	1,656.62188	371.20879	1,274.80285	260.73899	42.79392	177.22969
Worcs Rd DfT	2,482.76334	2,084.70600	398.05735	1,746.42037	391.33068	1,343.90534	291.71543	44.51851	177.22969

% change 2023-2029									
Source Name	**All Vehicles (g/km)**	**All LDVs (g/km)**	**All HDVs (g/km)**	**Total Cars**	**Total Petrol**	**Total diesel Cars**	**Total LGVs**	**Total Taxis**	**Total HGVs**
Worcs Rd NEVIS Med	-57.87%	-57.04%	-61.53%	-55.52%	-26.52%	-60.40%	-66.29%	-35.61%	-49.02%
Worcs Rd DfT	-55.68%	-54.36%	-61.53%	-53.11%	-22.53%	-58.25%	-62.29%	-33.02%	-49.02%
Average	**-56.78%**	**-55.70%**	**-61.53%**	**-54.31%**	**-24.52%**	**-59.33%**	**-64.29%**	**-34.32%**	**-49.02%**

Absolute Difference									
Source Name	**All Vehicles (g/km)**	**All LDVs (g/km)**	**All HDVs (g/km)**	**Total Cars**	**Total Petrol**	**Total diesel Cars**	**Total LGVs**	**Total Taxis**	**Total HGVs**
Worcs Rd NEVIS Med	-3242.16256	-2605.60187	-636.56069	-2067.83012	-133.94848	-1944.49189	-512.75778	-23.67125	-170.42368
Worcs Rd DfT	-3119.66303	-2483.10234	-636.56069	-1978.03163	-113.82658	-1875.38940	-481.78135	-21.94666	-170.42368
Average	**-3180.91280**	**-2544.35210**	**-636.56069**	**-2022.93087**	**-123.88753**	**-1909.94064**	**-497.26956**	**-22.80895**	**-170.42368**

Source apportionment 2023										
Petrol Cars (g/km)	Petrol Hybrid Cars (g/km)	Petrol Plugin Hybrid Cars (g/km)	Diesel Cars (g/km)	Diesel Hybrid Cars (g/km)	Electric Cars (g/km)		Petrol Taxis (g/km)	Petrol Hybrid Taxis (g/km)	Diesel Taxis (g/km)	Electric Taxi (g/km)
490.62290	11.81167	2.72269	3,198.72758	20.56716	-		0.01659	1.31333	65.13524	-
Ev Eft 2029										
Petrol Cars (g/km)	Petrol Hybrid Cars (g/km)	Petrol Plugin Hybrid Cars (g/km)	Diesel Cars (g/km)	Diesel Hybrid Cars (g/km)	Electric Cars (g/km)	LPG Cars (g/km)	Petrol Taxis (g/km)	Petrol Hybrid Taxis (g/km)	Diesel Taxis (g/km)	Electric Taxi (g/km)
368.70035	-	2.50844	1,274.80285	-	-	10.61025	0.06082	0.33376	42.39934	-
388.68627	-	2.64441	1,343.90534	-	-	11.18435	0.06327	0.34721	44.10803	-
% change 2023-2029										
Petrol Cars (g/km)	Petrol Hybrid Cars (g/km)	Petrol Plugin Hybrid Cars (g/km)	Diesel Cars (g/km)	Diesel Hybrid Cars (g/km)	Electric Cars (g/km)	LPG Cars (g/km)	Petrol Taxis (g/km)	Petrol Hybrid Taxis (g/km)	Diesel Taxis (g/km)	Electric Taxi (g/km)
-24.85%	-100.00%	-7.87%	-60.15%				266.54%	-74.59%	-34.91%	
-20.78%	-100.00%	-2.88%	-57.99%				281.32%	-73.56%	-32.28%	
-22.81%	**-100.00%**	**-5.37%**	**-59.07%**				**273.93%**	**-74.07%**	**-33.59%**	
Absolute Difference										
Petrol Cars (g/km)	Petrol Hybrid Cars (g/km)	Petrol Plugin Hybrid Cars (g/km)	Diesel Cars (g/km)	Diesel Hybrid Cars (g/km)	Electric Cars (g/km)	LPG Cars (g/km)	Petrol Taxis (g/km)	Petrol Hybrid Taxis (g/km)	Diesel Taxis (g/km)	Electric Taxi (g/km)
-121.92255	-11.81167	-0.21425	-1923.92473	-20.56716	0.00000	10.61025	0.04423	-0.97957	-22.73591	0.00000
-101.93663	-11.81167	-0.07828	-1854.82224	-20.56716	0.00000	11.18435	0.04668	-0.96612	-21.02722	0.00000
-111.92959	**-11.81167**	**-0.14627**	**-1889.37348**	**-20.56716**	**0.00000**	**10.89730**	**0.04545**	**-0.97284**	**-21.88156**	**0.00000**

Source apportionment 2023

Petrol LGVs (g/km)	Petrol Hybrid LGVs (g/km)	Petrol Plugin Hybrid LGVs (g/km)	Diesel LGVs (g/km)	Electric LGVs (g/km)		Rigid HGVs (g/km)	Rigid Electric HGVs (g/km)	Artic HGVs (g/km)	Artic Electric HGVs (g/km)	Conventional Buses (g/km)	Hybrid Buses (g/km)	Electric Buses (g/km)	Biogas Buses (g/km)
2.83912	-	-	770.65765	-		313.06953	-	34.58385	-	410.53798	8.05721	-	0.23450

Ev Eft 2029

Petrol LGVs (g/km)	Petrol Hybrid LGVs (g/km)	Petrol Plugin Hybrid LGVs (g/km)	Diesel LGVs (g/km)	Electric LGVs (g/km)	LPG LGVs (g/km)	Rigid HGVs (g/km)	Rigid Electric HGVs (g/km)	Artic HGVs (g/km)	Artic Electric HGVs (g/km)	Conventional Buses (g/km)	Hybrid Buses (g/km)	Electric Buses (g/km)	Biogas Buses (g/km)
2.20505	-	-	258.40841	-	0.12554	154.52903	-	22.70065	-	220.82766	-	-	-
2.46701	-	-	289.10796	-	0.14045	154.52903	-	22.70065	-	220.82766	-	-	-

% change 2023-2029

Petrol LGVs (g/km)	Petrol Hybrid LGVs (g/km)	Petrol Plugin Hybrid LGVs (g/km)	Diesel LGVs (g/km)	Electric LGVs (g/km)	LPG LGVs (g/km)	Rigid HGVs (g/km)	Rigid Electric HGVs (g/km)	Artic HGVs (g/km)	Artic Electric HGVs (g/km)	Conventional Buses (g/km)	Hybrid Buses (g/km)	Electric Buses (g/km)	Biogas Buses (g/km)
-22.33%			-66.47%			-50.64%		-34.36%		-46.21%			
-13.11%			-62.49%			-50.64%		-34.36%		-46.21%			
-17.72%			**-64.48%**			**-50.64%**		**-34.36%**		**-46.21%**			

Absolute Difference

Petrol LGVs (g/km)	Petrol Hybrid LGVs (g/km)	Petrol Plugin Hybrid LGVs (g/km)	Diesel LGVs (g/km)	Electric LGVs (g/km)	LPG LGVs (g/km)	Rigid HGVs (g/km)	Rigid Electric HGVs (g/km)	Artic HGVs (g/km)	Artic Electric HGVs (g/km)	Conventional Buses (g/km)	Hybrid Buses (g/km)	Electric Buses (g/km)	Biogas Buses (g/km)
-0.63407	0.00000	0.00000	-512.24925	0.00000	0.12554	-158.54049	0.00000	-11.88319	0.00000	-189.71032	-8.05721	0.00000	-0.23450
-0.37211	0.00000	0.00000	-481.54969	0.00000	0.14045	-158.54049	0.00000	-11.88319	0.00000	-189.71032	-8.05721	0.00000	-0.23450
-0.50309	**0.00000**	**0.00000**	**-496.89947**	**0.00000**	**0.13299**	**-158.54049**	**0.00000**	**-11.88319**	**0.00000**	**-189.71032**	**-8.05721**	**0.00000**	**-0.23450**

Source apportionment 2023													
Conventional Coaches (g/km)	Hybrid Coaches (g/km)	Electric Coaches (g/km)	Biogas Coaches (g/km)	Motorcycles (g/km)									
262.83636	5.20743	-	0.09119	3.39440									

Ev Eft 2029													
Conventional Coaches (g/km)	Hybrid Coaches (g/km)	Electric Coaches (g/km)	Biogas Coaches (g/km)	Motorcycles (g/km)	Bioethanol Cars (g/km)		Bioethanol LGVs (g/km)		Biodiesel Rigid HGVs (g/km)	Biodiesel Artic HGVs (g/km)	Biodiesel Buses (g/km)	Biomethane Buses (g/km)	Biodiesel Coaches (g/km)
-	-	-	-	2.05169	-		-		-	-	-	-	-
-	-	-	-	2.05169	-		-		-	-	-	-	-

% change 2023-2029													
Conventional Coaches (g/km)	Hybrid Coaches (g/km)	Electric Coaches (g/km)	Biogas Coaches (g/km)	Motorcycles (g/km)	Bioethanol Cars (g/km)		Bioethanol LGVs (g/km)		Biodiesel Rigid HGVs (g/km)	Biodiesel Artic HGVs (g/km)	Biodiesel Buses (g/km)	Biomethane Buses (g/km)	Biodiesel Coaches (g/km)
				-39.56%									
				-39.56%									
				-39.56%									

Absolute Difference													
Conventional Coaches (g/km)	Hybrid Coaches (g/km)	Electric Coaches (g/km)	Biogas Coaches (g/km)	Motorcycles (g/km)	Bioethanol Cars (g/km)		Bioethanol LGVs (g/km)		Biodiesel Rigid HGVs (g/km)	Biodiesel Artic HGVs (g/km)	Biodiesel Buses (g/km)	Biomethane Buses (g/km)	Biodiesel Coaches (g/km)
-262.83636	-5.20743	0.00000	-0.09119	-1.34271									
-262.83636	-5.20743	0.00000	-0.09119	-1.34271									
-262.83636	**-5.20743**	**0.00000**	**-0.09119**	**-1.34271**									

Table K.1 Summary of Impact - Measures supporting transition to Electric Vehicle Parc

Total EV Δ	Total Reduction	% Change 2023-29 Road Emissions		
Worcester Road, Bromsgrove	-2520.20044	-44.98%		
	Total/Road NOx Ratio	**% Change 2023-29 Total NOx**	**Banding**	**Compliant**
Total EV Δ Worcester Road	78%	-35.15%	**Very Large**	**Y**

Bus Fleet Improvements

Figure K.7 EFT Input – Bus Fleet Improvements

Primary Inputs		Pollutants	Selected	Standard Outputs	Selected	Additonal Outputs	Selected
Area	England (not London)	NO_x	Y	Air Quality Modelling (g/km/s)		Breakdown by Vehicle	Y
Year	2029	PM_{10}		Emissions Rates (g/km)	Y	Source Apportionment	Y
Traffic Format	Detailed Option 2	$PM_{2.5}$		Annual Link Emissions		PM by Source	
All must be selected		CO_2				Primary NO_2 Fraction	
						Export Outputs	

SourceID	Road Type	Traffic Flow	% Car	% Taxi (black cab)	% LGV	% Rigid HGV	% Artic HGV
Worcester Road Nor	Urban (not London)	8160	86.77696078	1.18872549	8.590686275	1.078431373	0.208333333
Worcester Road Sou	Urban (not London)	8715	86.6551922	1.434308663	8.376362593	1.181870338	0.17211704
Worcester Rd Comb	Urban (not London)	16875	86.71407407	1.315555556	8.48	1.131851852	0.18962963

Advanced Options	Selected
Bespoke Base Fleets	
Bespoke Euro Fleet	Y
Fleet Projection Tool	

Click the button to:

Run EFT

Clear Input Data

% Bus and Coach	% Motorcycle	Speed(kph)	No of Hours	Link Length (km)	% Gradient	Flow Direction	% Load
1.666666667	0.490196078	19.6	24				
1.629374641	0.550774527	22	24				
1.647407407	0.521481481	20.8	24				

Figure K.8 Bespoke Euro Fleet – Bus Fleet Improvements

Populate with Defaults | OK

Default Euro Proportions 2029 - England (not London)

Cars	Pre-Euro 1	Euro 1	Euro 2	Euro 3	Euro 4	Euro 5	Euro 6 a/b/c	Euro 6 d-temp	Euro 6 d
Conventional Petrol	-	-	-	-	0.00	0.06	0.20	0.12	0.62
Hybrid Petrol				-	0.00	0.02	0.09	0.10	0.79
Plugin Hybrid Petrol					0.00	0.00	0.04	0.05	0.91
Conventional Diesel	-	-	-	-	0.01	0.13	0.32	0.10	0.44
Hybrid Diesel				-	0.00	0.00	0.05	0.14	0.80

LGVs	Pre-Euro 1	Euro 1	Euro 2	Euro 3	Euro 4	Euro 5	Euro 6_1	Euro 6_2	Euro 6_3
Petrol LGV	-	-	-	-	0.00	0.01	0.01	0.03	0.94
Diesel LGV	-	-	-	-	0.00	0.05	0.05	0.11	0.79
Petrol Taxi	-	-	-	-	0.00	0.01	0.01	0.03	0.94
Diesel Taxi	-	-	-	-	0.00	0.05	0.05	0.11	0.79

Heavy Duty Vehicles	Pre-Euro I	Euro I	Euro II	Euro III	Euro IV	Euro V_EGR	Euro V_SCR	Euro VI	Euro II SCRRF	Euro III SCRRF	Euro IV SCRRF	Euro V SCRRF to EGR
Rigid HGVs	-	-	-	0.00	0.01	0.00	0.01	0.97	-	-	-	-
Artic HGVs	-	-	-	0.00	0.00	0.00	0.00	1.00	-	-	-	-
Conventional Buses	-	-	-	0.00	0.01	0.01	0.03	0.95	-	-	-	-
Hybrid Buses					-	0.18	0.54	0.27				
Conventional Coaches	-	-	-	0.00	0.01	0.01	0.03	0.95	-	-	-	-
Hybrid Coaches					-	0.18	0.54	0.27				

User Euro Proportions 2029 - England (not London)

Cars	Pre-Euro 1	Euro 1	Euro 2	Euro 3	Euro 4	Euro 5	Euro 6 a/b/c	Euro 6 d-temp	Euro 6 d	
Conventional Petrol	-	-	-	-	0.00	0.06	0.20	0.12	0.62	OK
Hybrid Petrol				-	0.00	0.02	0.09	0.10	0.79	OK
Plugin Hybrid Petrol					0.00	0.00	0.04	0.05	0.91	OK
Conventional Diesel	-	-	-	-	0.01	0.13	0.32	0.10	0.44	OK
Hybrid Diesel				-	0.00	0.00	0.05	0.14	0.80	OK

LGVs	Pre-Euro 1	Euro 1	Euro 2	Euro 3	Euro 4	Euro 5	Euro 6_1	Euro 6_2	Euro 6_3	
Petrol LGV	-	-	-	-	0.00	0.01	0.01	0.03	0.94	OK
Diesel LGV	-	-	-	-	0.00	0.05	0.05	0.11	0.79	OK
Petrol Taxi	-	-	-	-	0.00	0.01	0.01	0.03	0.94	OK
Diesel Taxi	-	-	-	-	0.00	0.05	0.05	0.11	0.79	OK

Heavy Duty Vehicles	Pre-Euro I	Euro I	Euro II	Euro III	Euro IV	Euro V_EGR	Euro V_SCR	Euro VI	Euro II SCRRF	Euro III SCRRF	Euro IV SCRRF	Euro V SCRRF to EGR	
Rigid HGVs	-	-	-	-	0.01	0.00	0.01	0.97	-	-	-	-	OK
Artic HGVs	-	-	-	-	0.00	0.00	0.00	1.00	-	-	-	-	OK
Conventional Buses	-	-	-	-	-	-	-	1.00	-	-	-	-	OK
Hybrid Buses					-	0.18	0.54	0.27					OK
Conventional Coaches	-	-	-	-	0.01	0.01	0.03	0.95	-	-	-	-	OK
Hybrid Coaches					-	0.18	0.54	0.27					OK

Default Vehicle Size Classes 2029 - England (not London)

	<1400	1400-2000	>2000
Petrol Car	0.59	0.32	0.09
Diesel Car	0.11	0.60	0.28
	N1 (I)	N1 (II)	N1 (III)
Petrol LGV	0.17	0.21	0.62
Diesel LGV	0.06	0.26	0.68
	3.5-7.5 t	7.5-12 t	12-14 t	14-20 t	20-26 t	26-28 t	28-32 t	>32 t
Rigid HGV	0.23	0.05	0.02	0.12	0.18	0.11	0.23	0.06
	14-20 t	20-28 t	28-34 t	34-40 t	40-50 t			
Artic HGV	0.01	0.02	0.01	0.10	0.86			
	Midi <=15 t	Standard 15 - 18 t	Articulated >18 t					
Buses	0.31	0.69	-					
	Standard <=18 t	Articulated >18 t						
Coaches	0.50	0.50						

User Vehicle Size Class 2029 - England (not London)

	<1400	1400-2000	>2000						
Petrol Car	0.59	0.32	0.09						OK
Diesel Car	0.11	0.60	0.28						OK
	N1 (I)	N1 (II)	N1 (III)						
Petrol LGV	0.17	0.21	0.62						OK
Diesel LGV	0.06	0.26	0.68						OK
	3.5-7.5 t	7.5-12 t	12-14 t	14-20 t	20-26 t	26-28 t	28-32 t	>32 t	
Rigid HGV	0.23	0.05	0.02	0.12	0.18	0.11	0.23	0.06	OK
	14-20 t	20-28 t	28-34 t	34-40 t	40-50 t				
Artic HGV	0.01	0.02	0.01	0.10	0.86				OK
	Midi <=15 t	Standard 15 - 18 t	Articulated >18 t						
Buses	0.31	0.69	-						OK
	Standard <=18 t	Articulated >18 t							
Coaches	0.50	0.50							OK

Figure K.9 EFT Output – Bus Fleet Improvements

Source Name	Pollutant Name	All Vehicles (g/km)	All LDVs (g/km)	All HDVs (g/km)	Petrol Cars (g/km)	Petrol Hybrid Cars (g/km)	Petrol Plugin Hybrid Cars (g/km)	Diesel Cars (g/km)	Diesel Hybrid Cars (g/km)	Electric Cars (g/km)
Worcester Road Northbound	NOx	1,204.09327	1,024.71389	179.37938	199.79388	9.04127	3.22558	635.85271	10.68653	-
Worcester Road Southbound	NOx	1,225.51656	1,050.58707	174.92949	207.73181	9.39949	3.35269	649.89624	10.92289	-
Worcester Rd Combined	NOx	2,429.43118	2,075.28848	354.14270	407.54099	18.44145	6.57852	1,285.85453	21.61108	-

Petrol Taxis (g/km)	Petrol Hybrid Taxis (g/km)	Diesel Taxis (g/km)	Electric Taxi (g/km)	Petrol LGVs (g/km)	Petrol Hybrid LGVs (g/km)	Petrol Plugin Hybrid LGVs (g/km)	Diesel LGVs (g/km)	Electric LGVs (g/km)	Rigid HGVs (g/km)	Rigid Electric HGVs (g/km)	Artic HGVs (g/km)	Artic Electric HGVs (g/km)
0.00043	0.75304	3.82073	-	1.18720	-	-	159.39936	-	78.88824	-	13.34237	-
0.00053	0.93168	4.78535	-	1.21988	-	-	161.25315	-	82.05686	-	10.48858	-
0.00097	1.68819	8.61487	-	2.40674	-	-	320.49945	-	161.14807	-	23.67301	-

Conventional Buses (g/km)	Hybrid Buses (g/km)	Electric Buses (g/km)	Biogas Buses (g/km)	Conventional Coaches (g/km)	Hybrid Coaches (g/km)	Electric Coaches (g/km)	Biogas Coaches (g/km)	TfL Conventional Buses (g/km)	TfL Hybrid Buses (g/km)	TfL Electric Buses (g/km)	TfL Biogas Buses (g/km)	Motorcycles (g/km)
39.86321	1.49658	-	0.05424	44.73670	0.97694	-	0.02109	-	-	-	-	0.95317
37.73954	1.42317	-	0.05663	42.22717	0.91553	-	0.02202	-	-	-	-	1.09336
77.54291	2.91586	-	0.11086	86.82026	1.88861	-	0.04311	-	-	-	-	2.05169

Figure K.10 Calculating Impact – Bus Fleet Improvements

Source apportionment														
Source Name	**All Vehicles (g/km)**	**All LDVs (g/km)**	**All HDVs (g/km)**	**Total Buses**	**Petrol Cars (g/km)**	**Petrol Hybrid Cars (g**	**Petrol Plugin Hybric**							
Worcester Rd Combined	5,729.59774	4,567.80834	1,161.78940	814.13603	490.62290	11.81167	2.72269							
Buses Eft 2029														
Worcs Rd EC VI 2029	2,429.43118	2,075.28848	354.14270	169.32162	407.54099	18.44145	6.57852							
% change 2023-2029														
Worcs Rd combined 2029	-58%	-55%	-70%	-79%	-17%	56%	142%							
Absolute Difference														
Worcs Rd combined 2029	-3300.166569	-2492.519862	-807.646707	-644.8144109	-83.08190764	6.629775744	3.855828854							

Source apportionment														
Diesel Cars (g/km)	**Diesel Hybrid Cars**	**Electric Cars (g/**	**Petrol Taxis**	**Petrol Hyb**	**Diesel Tax**	**Electric Ta**	**Petrol LGV**	**Petrol Hyb**	**Petrol Plu**	**Diesel LGV:**	**Electric LG**	**Rigid HGVs**	**Rigid Elect**	
3,198.72758	20.56716	-	0.01659	1.31333	65.13524	-	2.83912	-	-	770.65765	-	313.06953	-	
Buses Eft 2029														
1,285.85453	21.61108	-	0.00097	1.68819	8.61487	-	2.40674	-	-	320.49945	-	161.14807	-	
% change 2023-2029														
-60%	5%		-94%	29%	-87%		-15%			-58%		-49%		
Absolute Difference														
-1912.873051	1.04392454	0	-0.0156258	0.374858	-56.52037	0	-0.432379	0	0	-450.1582	0	-151.9215	0	

Source apportionment															
Artic HGV	**Artic Elect**	**Conventiona**	**Hybrid Bu**	**Electric Bu**	**Biogas Bus**	**Conventional C**	**Hybrid Co**	**Electric Cc**	**Biogas Co**	**TfL Conve**	**TfL Hybrid**	**TfL Electri**	**TfL Biogas**	**Motorcycles (g/km)**	
34.58385	-	537.70934	8.05721	-	0.23450	262.83636	5.20743	-	0.09119	-	-	-	-	3.39440	
Buses Eft 2029															
23.67301	-	77.54291	2.91586	-	0.11086	86.82026	1.88861	-	0.04311	-	-	-	-	2.05169	
% change 2023-2029															
-32%		-86%	-64%		-53%	-67%	-64%		-53%	0%	0%	0%	0%	-40%	
Absolute Difference															
-10.9108	0	-460.166436	-5.14134	0	-0.12363	-176.0161011	-3.31882	0	-0.04808	0	0	0	0	-1.34271	

Table K.2 Summary of Impact – Bus Fleet Improvements

Total Bus Δ	Total Reduction	% Change 2023-29 Road Emissions		
Worcester Road, Bromsgrove	-644.81441	-11.25%		
	Total/Road NOx Ratio	**% Change 2023-29 Total NOx**	**Banding**	**Compliant**
Total Bus Δ Worcester Road	78%	-8.79%	**Large**	**Y**

Bus Service Improvement Plan

Figure K.11 EFT Input - Bus Service Improvement Plan

Primary Inputs		Pollutants	Selected	Standard Outputs	Selected	Additonal Outputs	Selected
Area	England (not London)	NO_x	Y	Air Quality Modelling (g/km/s)		Breakdown by Vehicle	Y
Year	2023	PM_{10}		Emissions Rates (g/km)	Y	Source Apportionment	
Traffic Format	Detailed Option 2	$PM_{2.5}$		Annual Link Emissions		PM by Source	
All must be selected		CO_2				Primary NO_2 Fraction	
						Export Outputs	

SourceID	Road Type	Traffic Flow	% Car	% Taxi (black cab)	% LGV	% Rigid HGV	% Artic HGV
Worcs Rd combined	Urban (not London)	16791.5919	86.64807951	1.322090254	8.522122313	1.137474047	0.190571568

Advanced Options	Selected
Bespoke Base Fleets	
Bespoke Euro Fleet	Y
Fleet Projection Tool	

Click the button to:

Run EFT

Clear Input Data

% Bus and Coach	% Motorcycle	Speed(kph)	No of Hours	Link Length (km)	% Gradient	Flow Direction	% Load
1.655590498	0.524071812	20.8	24				

Figure K.12 Bespoke Euro Fleet – BSIP

Default Euro Proportions 2023 - England (not London)

Cars	Pre-Euro 1	Euro 1	Euro 2	Euro 3	Euro 4	Euro 5	Euro 6 a/b/c	Euro 6 d-temp	Euro 6 d
Conventional Petrol	-	-	-	0.02	0.10	0.23	0.31	0.16	0.19
Hybrid Petrol				0.00	0.02	0.11	0.23	0.21	0.43
Plugin Hybrid Petrol					0.00	0.02	0.16	0.14	0.68
Conventional Diesel	-	-	-	0.01	0.10	0.34	0.37	0.09	0.08
Hybrid Diesel				0.00	0.00	0.01	0.10	0.23	0.65

LGVs	Pre-Euro 1	Euro 1	Euro 2	Euro 3	Euro 4	Euro 5	Euro 6_1	Euro 6_2	Euro 6_3
Petrol LGV	-	-	-	0.03	0.08	0.12	0.07	0.21	0.50
Diesel LGV	-	-	-	0.01	0.06	0.19	0.12	0.26	0.36
Petrol Taxi	-	-	-	0.03	0.08	0.12	0.07	0.21	0.50
Diesel Taxi	-	-	-	0.01	0.06	0.19	0.12	0.26	0.36

Heavy Duty Vehicles	Pre-Euro I	Euro I	Euro II	Euro III	Euro IV	Euro V_EGR	Euro V_SCR	Euro VI	Euro II SCRRF	Euro III SCRRF	Euro IV SCRRF	Euro V SCRRF to EGR
Rigid HGVs	-	-	0.01	0.03	0.02	0.03	0.08	0.84	-	-	-	-
Artic HGVs	-	-	0.00	0.00	0.00	0.01	0.03	0.96	-	-	-	-
Conventional Buses	-	-	0.01	0.03	0.04	0.05	0.15	0.72	-	-	-	-
Hybrid Buses					-	0.20	0.59	0.21				
Conventional Coaches	-	-	0.01	0.03	0.04	0.05	0.15	0.72	-	-	-	-
Hybrid Coaches					-	0.20	0.59	0.21				

User Euro Proportions 2023 - England (not London)

Cars	Pre-Euro 1	Euro 1	Euro 2	Euro 3	Euro 4	Euro 5	Euro 6 a/b/c	Euro 6 d-temp	Euro 6 d	
Conventional Petrol	-	-	-	0.02	0.10	0.23	0.31	0.16	0.19	OK
Hybrid Petrol				0.00	0.02	0.11	0.23	0.21	0.43	OK
Plugin Hybrid Petrol					0.00	0.02	0.16	0.14	0.68	OK
Conventional Diesel	-	-	-	0.01	0.10	0.34	0.37	0.09	0.08	OK
Hybrid Diesel				0.00	0.00	0.01	0.10	0.23	0.65	OK

LGVs	Pre-Euro 1	Euro 1	Euro 2	Euro 3	Euro 4	Euro 5	Euro 6_1	Euro 6_2	Euro 6_3	
Petrol LGV	-	-	-	0.03	0.08	0.12	0.07	0.21	0.50	OK
Diesel LGV	-	-	-	0.01	0.06	0.19	0.12	0.26	0.36	OK
Petrol Taxi	-	-	-	0.03	0.08	0.12	0.07	0.21	0.50	OK
Diesel Taxi	-	-	-	0.01	0.06	0.19	0.12	0.26	0.36	OK

Heavy Duty Vehicles	Pre-Euro I	Euro I	Euro II	Euro III	Euro IV	Euro V_EGR	Euro V_SCR	Euro VI	Euro II SCRRF	Euro III SCRRF	Euro IV SCRRF	Euro V SCRRF to EGR	
Rigid HGVs	-	-	0.01	0.03	0.02	0.03	0.08	0.84	-	-	-	-	OK
Artic HGVs	-	-	0.00	0.00	0.00	0.01	0.03	0.96	-	-	-	-	OK
Conventional Buses	-	-	0.01	0.03	0.04	0.05	0.15	0.72	-	-	-	-	OK
Hybrid Buses					-	0.20	0.59	0.21					OK
Conventional Coaches	-	-	0.01	0.03	0.04	0.05	0.15	0.72	-	-	-	-	OK
Hybrid Coaches					-	0.20	0.59	0.21					OK

Default Vehicle Size Classes 2023 - England (not London)

	<1400	1400-2000	>2000
Petrol Car	0.59	0.32	0.09
Diesel Car	0.11	0.60	0.28
	N1 (I)	N1 (II)	N1 (III)
Petrol LGV	0.17	0.21	0.62
Diesel LGV	0.06	0.26	0.68

	3.5-7.5 t	7.5-12 t	12-14 t	14-20 t	20-26 t	26-28 t	28-32 t	>32 t
Rigid HGV	0.23	0.05	0.02	0.12	0.18	0.11	0.23	0.06

	14-20 t	20-28 t	28-34 t	34-40 t	40-50 t
Artic HGV	0.01	0.02	0.01	0.10	0.86

	Midi <=15 t	Standard 15 - 18 t	Articulated >18 t
Buses	0.31	0.69	-

	Standard <=18 t	Articulated >18 t
Coaches	0.50	0.50

User Vehicle Size Class 2023 - England (not London)

	<1400	1400-2000	>2000	
Petrol Car	0.59	0.32	0.09	OK
Diesel Car	0.11	0.60	0.28	OK
	N1 (I)	N1 (II)	N1 (III)	
Petrol LGV	0.17	0.21	0.62	OK
Diesel LGV	0.06	0.26	0.68	OK

	3.5-7.5 t	7.5-12 t	12-14 t	14-20 t	20-26 t	26-28 t	28-32 t	>32 t	
Rigid HGV	0.23	0.05	0.02	0.12	0.18	0.11	0.23	0.06	OK

	14-20 t	20-28 t	28-34 t	34-40 t	40-50 t	
Artic HGV	0.01	0.02	0.01	0.10	0.86	OK

	Midi <=15 t	Standard 15 - 18 t	Articulated >18 t	
Buses	0.31	0.69	-	OK

	Standard <=18 t	Articulated >18 t		
Coaches	0.50	0.50		OK

Figure K.13 EFT Output – BSIP

Source Name	Pollutant Name	All Vehicles (g/km)	All LDVs (g/km)	All HDVs (g/km)	Petrol Cars (g/km)	Petrol Hybrid Cars (g/km)	Petrol Plugin Hybrid Cars (g/km)	Diesel Cars (g/km)	Diesel Hybrid Cars (g/km)	Electric Cars (g/km)
Worcs Rd combined	NOx	5,708.36837	4,546.57896	1,161.78940	487.82635	11.74434	2.70717	3,180.49483	20.44993	-

Petrol Taxis (g/km)	Petrol Hybrid Taxis (g/km)	Diesel Taxis (g/km)	Electric Taxi (g/km)	Petrol LGVs (g/km)	Petrol Hybrid LGVs (g/km)	Petrol Plugin Hybrid LGVs (g/km)	Diesel LGVs (g/km)	Electric LGVs (g/km)	Rigid HGVs (g/km)	Rigid Electric HGVs (g/km)	Artic HGVs (g/km)	Artic Electric HGVs (g/km)
0.01659	1.31333	65.13524	-	2.83912	-	-	770.65765	-	313.06953	-	34.58385	-

Conventional Buses (g/km)	Hybrid Buses (g/km)	Electric Buses (g/km)	Biogas Buses (g/km)	Conventional Coaches (g/km)	Hybrid Coaches (g/km)	Electric Coaches (g/km)	Biogas Coaches (g/km)	TfL Conventional Buses (g/km)	TfL Hybrid Buses (g/km)	TfL Electric Buses (g/km)	TfL Biogas Buses (g/km)	Motorcycles (g/km)
537.70934	8.05721	-	0.23450	262.83636	5.20743	-	0.09119	-	-	-	-	3.39440

Figure K.14 Calculating Impact – BSIP

Source apportionment									
Source Name	**Pollutant Name**	**All Vehicles (g/km)**	**All LDVs (g/km)**	**All HDVs (g/km)**	**Total Cars**	**Petrol Cars (g/km)**	**Petrol Hybrid Cars (g**	**Petrol Plugin Hybric**	
Worcester Rd Combined	NOx	5,729.59774	4,567.80834	1,161.78940	3,724.45200	490.62290	11.81167	2.72269	
BSIP Eft 2029									
Worcs Rd EfT Less cars (BSIP)	NOx	5,708.36837	4,546.57896	1,161.78940	3,703.22262	487.82635	11.74434	2.70717	
% change 2023-2029									
Worcs Rd Less cars (BSIP)		-0.37%	-0.46%	0.00%	-0.57%	-0.57%	-0.57%	-0.57%	
Absolute Difference									
Worcs Rd Less cars (BSIP)		-21.2293764	-21.2293764	9.09495E-13	-21.2293764	-2.796550529	-0.067326521	-0.015519349	

Source apportionment													
Diesel Cars (g/km)	**Diesel Hybrid Cars**	**Electric Cars (g/**	**Petrol Taxis**	**Petrol Hyb**	**Diesel Tax**	**Electric Ta**	**Petrol LGV**	**Petrol Hyb**	**Petrol Plu**	**Diesel LGV**	**Electric LG**	**Rigid HGVs**	**Rigid Elect**
3,198.72758	20.56716	-	0.01659	1.31333	65.13524	-	2.83912	-	-	770.65765	-	313.06953	-
BSIP Eft 2029													
3,180.49483	20.44993	-	0.01659	1.31333	65.13524	-	2.83912	-	-	770.65765	-	313.06953	-
% change 2023-2029													
-0.57%	-0.57%	-	0.00%	0.00%	0.00%	-	0.00%	-	-	0.00%	-	0.00%	-
Absolute Difference													
-18.23274719	-0.117232813	0	-5.551E-17	-4.22E-15	-2.27E-13	0	-8.88E-16	0	0	0	0	1.648E-12	0

Source apportionment														
Artic HGV	**Artic Elect**	**Conventiona**	**Hybrid Bu**	**Electric Bu**	**Biogas Bus**	**Conventional C**	**Hybrid Co**	**Electric Cc**	**Biogas Co**	**TfL Conve**	**TfL Hybrid**	**TfL Electri**	**TfL Biogas**	**Motorcycles (g/km)**
34.58385	-	537.70934	8.05721	-	0.23450	262.83636	5.20743	-	0.09119	-	-	-	-	3.39440
BSIP Eft 2029														
34.58385	-	537.70934	8.05721	-	0.23450	262.83636	5.20743	-	0.09119	-	-	-	-	3.39440
% change 2023-2029														
0.00%	-	0.00%	0.00%	-	0.00%	0.00%	0.00%	-	0.00%	-	-	-	-	0.00%
Absolute Difference														
-1.3E-13	0	-3.4106E-13	-7.1E-15	0	-2.2E-16	-2.27374E-13	-3.6E-15	0	-6.9E-17	0	0	0	0	8.88E-16

Table K.3 Summary of Impact – BSIP

Total BSIP Δ	Total Reduction	% Change 2023-29 Road Emissions		
Worcester Road, Bromsgrove	-21.22938	-0.37%		
	Total/Road NOx Ratio	**% Change 2023-29 Total NOx**	**Banding**	**Compliant**
Total BSIP Δ Worcester Road	78%	-0.29%	**Small**	**N**

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
AQO	Air Quality Objective
AQS	Air Quality Strategy
ASR	Air quality Annual Status Report
BDC	Bromsgrove District Council
BEV	Battery Electric Vehicles
CO_2	Carbon Dioxide
Defra	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
EC	Euro Code. European vehicle emission standards for pollution.
EEA	European Environmental Agency
EFT	Emissions Factor Toolkit
EV	Electric Vehicles

HGV	Heavy Goods Vehicles
ICE	Internal Combustion Engine
LAQM	Local Air Quality Management
LCWIP	Local Cycling and Walking Infrastructure Plan
LEV	Low Emission Vehicle
LEVI	Local Electric Vehicle Infrastructure
LGV	Light Goods Vehicles
NEVIS	National Electric Vehicle Insight and Support
NHS	National Health Service
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PHE	Public Health England
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
RCV	Refuse Collection Vehicles
WCC	Worcestershire County Council
WHO	World Health Organisation
WRS	Worcestershire Regulatory Services

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