ARUP

Sheffield City Council

Infrastructure Delivery Plan

Part 2: Infrastructure Schedule

2.1

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Executive Summary

This Infrastructure Schedule is the second of two parts of a new Infrastructure Delivery Plan for Sheffield. It has been prepared in the context of the Council's new Local Plan for the city (The 'Sheffield Plan'). This Part 2 report sets out the current expectation (ahead of the submission of the Sheffield Plan for examination) of specific infrastructure schemes to support growth, as well as providing updates where relevant to the Part 1 Infrastructure Needs Assessment which was produced prior to Regulation 19 publication of the Sheffield Plan.

Part 2 of the IDP has been informed by an ongoing programme of engagement with infrastructure stakeholders. This has re-confirmed the fundamental conclusion from Part 1 of the IDP, that there are currently no infrastructure types for which constraints suggest there could be a fundamental inability to deliver the quantums of growth set out in the Sheffield Plan.

A range of nearly 100 specific infrastructure schemes have been identified – many a direct response to the growth proposals in the Sheffield Plan, although a number also provide an opportunity to respond to existing baseline infrastructure issues within the city. These have been prioritised based upon the realities of funding them in a scarce funding environment, necessarily reliant upon limited funds available both from developer contributions and outside investment such as that available from Government. It is therefore acknowledged that not all of the infrastructure schemes set out in the infrastructure schedule can or will be delivered, but the schedule will nevertheless form a basis upon which the Council and its partners can make informed funding decisions in the future.

There are a number of areas where our discussions with infrastructure stakeholders have identified known or foreseeable needs for future investment, but where it has not yet been possible to establish specific infrastructure schemes. These are set out throughout Chapter 4. It is also recognised that, given the urban, regeneration-focussed nature of the Sheffield Plan's development strategy, it is relatively difficult at this early stage to quantify and hence establish specific costs for some infrastructure schemes.

Accordingly, it is recommended that this Infrastructure Schedule (as well as the baseline context in Part 1 of the IDP) are treated as a live document and continue to be updated as the Sheffield Plan progresses through examination and into its implementation phase over the coming years. This will help to ensure that sustainable development is achieved in Sheffield, responding to the most up-to-date and comprehensive possible understanding of infrastructure needs as they evolve.

1. Introduction

1.1 Role of the Infrastructure Delivery Plan

Sheffield City Council (referred to throughout as 'the Council') has commissioned Ove Arup and Partners Limited (Arup) to prepare an Infrastructure Delivery Plan (IDP) for the Sheffield Local Planning Authority administrative area.

Infrastructure funding and delivery is complex. Establishing a reliable, concise and flexible IDP is therefore important in ensuring that investment decisions are based on a sound understanding of infrastructure capacity and future needs, whilst maximising the return to the public. Having an up-to-date IDP in place offers greater certainty to service providers, funders and developers about how infrastructure will be delivered, enabling growth and encouraging investment.

The Council's existing development plan comprises the Sheffield Unitary Development Plan (Adopted 1998) and the Core Strategy (Adopted 2009)[1]. The Council is now producing a replacement Local Plan (the Sheffield Plan), which will cover the period up to 2039. The Publication Draft (Regulation 19) version will be subject to public consultation in early 2023, ahead of submission and progression towards Examination later in 2023.

The IDP is split into two parts. This document forms Part 2 of the IDP, the Infrastructure Schedule of specific infrastructure schemes currently anticipated to be required to support the growth proposed in the Sheffield Plan. Where possible, it sets out details of the anticipated delivery mechanisms and costs for those schemes. This Part 2 document accompanies the Infrastructure Needs Assessment which forms Part 1 of the IDP, and which was published prior to Regulation 19 consultation on the Sheffield Plan in order to set out a baseline understanding of infrastructure capacity and needs within Sheffield.

This document also provides some updates to the contextual and baseline positions set out within Part 1 of the IDP, reflecting the outcomes of further analysis and engagement with infrastructure providers over the approximate nine months since the previous engagement was undertaken to inform Part 1.

IDPs should be treated as 'live documents' which provide a snapshot at a point in time and will need to be updated as development proposals and other circumstances in the city change. This

[1] Sheffield adopted Development Plan Documents (sheffield.gov.uk)

document could therefore form the basis for further updates as the Sheffield Plan progresses through examination and is subsequently adopted.

1.2 Structure of this document

This Part 2 Infrastructure Schedule is intended to be read alongside the Part 1 Infrastructure Needs Assessment published in January 2023[2]. In addition to this introduction, it contains three further chapters:

- **Chapter 2** sets out the methodology followed throughout the production of Part 2, and the structure of the Infrastructure Schedule.
- **Chapter 3** sets out updates to the baseline position set out in Part 1 of the IDP, by exception (i.e. only where there are changes or updates to report).
- **Chapter 4** sets out a summary of inclusions within the Infrastructure Schedule, set out across the six topics in the IDP and in the same order as set out in Part 1 of the IDP. It also sets out next steps to move towards the implementation of schemes within each topic.

Annex A forms the Infrastructure Schedule itself and is laid out as a table ordered by infrastructure topic.

[2] Sheffield IDP Part 1 - Infrastructure Needs Assessment (sheffield.gov.uk)

2. Infrastructure Schedule methodology

2.1 Stakeholder re-engagement for Part 2 of the IDP

The production of the Part 1 IDP Infrastructure Needs Assessment included a comprehensive programme of engagement with infrastructure providers and other relevant stakeholders. Full details are set out within Part 1 of the IDP, across each of the infrastructure topics in Chapter 4 and summarised in Table 5 in that report's methodology (Section 3.3). In broad terms, Part 1 of the IDP was well-informed by advice and expertise from stakeholders with there only being three infrastructure providers for whom it was not possible to arrange a meeting or otherwise obtain inputs – South Yorkshire Fire Service, South Yorkshire Police and Yorkshire Water.

In order to try and establish specific infrastructure schemes for Part 2 of the IDP, re-engagement with infrastructure providers has been attempted (where Part 1 identified the likely need for such schemes – for example, Part 1 does not identify a need for specific future digital infrastructure and hence no further engagement was undertaken for this topic). In Part 2 we have also sought to address the gaps in Part 1 engagement noted above.

Table 1: List of stakeholders with which meetings or correspondence have taken place for Part 2 of the IDP

Stakeholder	Infrastructure types discussed
Sheffield City Council	Highways Public transport Active travel Education Formal parks and gardens Allotments Sports facilities Community centres and leisure Burial and cremation services
South Yorkshire Mayoral Combined Authority	Highways Public transport Active travel
National Highways	Highways
Network Rail	Public transport
NHS South Yorkshire Integrated Care Board	Primary healthcare
Severn Trent Water	Water supply
Northern Powergrid	Electricity supply
Veolia	District heat network

Table 1 above provides a summary of the re-engagement undertaken for Part 2 of the IDP. It has unfortunately not been possible to receive full responses from the following:

- Sheffield City Council Library Services – Due to resourcing constraints, it has not been possible for officers responsible for library provision to provide any further specific

comments on infrastructure schemes for Part 2. However, a baseline of some scheme information was already provided in Part 1.

- South Yorkshire Fire & Rescue Service – As in Part 1, it has not been possible to obtain any response or inputs from South Yorkshire Fire & Rescue Service in Part 2. The Part 1 report identified that fire and rescue infrastructure is unlikely to be significantly impacted by growth within Sheffield given the regional basis on which services are provided, although attempts at ongoing engagement should still continue to be made as the Sheffield Plan progresses through into implementation.

- South Yorkshire Police – Initial contact was made with contacts at South Yorkshire Police early in the preparation of Part 2 of the IDP, following an inability to obtain any response or inputs in Part 1. However, this initial contact has not resulted in the provision of any comments on the impacts of the Sheffield Plan on policing infrastructure or the identification of any specific infrastructure schemes. As with fire and rescue services, despite Part 1 of the IDP identifying that policing infrastructure is unlikely to be significantly impacted by growth within Sheffield, attempts at ongoing engagement with South Yorkshire Police should continue to be made as the Sheffield Plan progresses through into implementation.

- Yorkshire Water – It was not possible to engage with Yorkshire Water during the production of Part 1 of the IDP, although a meeting was held with Yorkshire Water shortly after the finalisation of the Part 1 report to discuss baseline and contextual issues with regards to sewerage provision in Sheffield. The outcomes of these discussions are set out in Chapter 3. However, at the time of writing it has not been possible to obtain further information from Yorkshire Water around specific infrastructure schemes. The implications of this and the assumptions we have made as a result are set out within Chapter 4 and in the methodology in Section 2.3 below.

2.2 Structure of the Infrastructure Schedule

The Infrastructure Schedule set out in Annex A sets out the details of each specific infrastructure scheme currently anticipated within Sheffield over the plan period through to 2039. These schemes have been identified through:

- Initial engagement with infrastructure stakeholders for the Part 1 IDP Infrastructure Needs Assessment, in late 2022;

- Subsequent follow-up engagement with infrastructure stakeholders specifically to inform Part 2 of the IDP and the production of the Infrastructure Schedule;
- Analysis and assessment undertaken by Arup, either to further develop responses from infrastructure providers or to fill gaps where responses have not been received.

Chapter 4 sets out a summary of the schemes included in the Infrastructure Schedule, the nature of these schemes and identified next steps to further develop these schemes and move towards implementation.

The Infrastructure Schedule is set out in the same order as the headings for each infrastructure topic within Chapter 4 and Part 1 of the IDP. It provides consistent information for each infrastructure scheme, across the following columns:

- **Scheme reference** – For ease of reference, each scheme has been given a unique reference number.
- **Infrastructure type** – The infrastructure type under which the scheme sites. Some schemes are cross-cutting across several different infrastructure types.
- **Scheme description** – Summary details of the infrastructure scheme setting out its name, description and what aims to achieve.
- **Scheme location** – The city sub-areas (as detailed in Part 1 of the IDP) where the scheme would be located. For some schemes this will be more than one sub-area, may be citywide or may include other local authority areas where schemes are not solely located within Sheffield.
- **Delivery body** – The infrastructure provider and/or public body with responsibility for the delivery of the scheme Responsibility may be shared between several delivery bodies.
- **Funding method** – The means by which it is anticipated that funding for the scheme will be provided including whether this is likely to be via direct developer delivery, developer contributions paid to SCC, external funding sources or not yet known.
- **Delivery phasing** – The broad timescales within the plan period where it is anticipated that the scheme will be delivered, broken down into five-year tranches – 2024-2029, 2029-2034 and 2034-2039. These are based upon the time likely to be needed to fund and develop the scheme, and where relevant these are also linked to the anticipated phasing of delivery of sites in the vicinity to which the delivery of infrastructure will need to be linked.

- **Prioritisation** – To support future investment and funding decisions, schemes have been assigned a recommended priority level based on our assessment of their relative significance. It should be noted that these may not necessarily reflect future political and infrastructure provider decisions about how investment should be targeted and should therefore be treated as indicative. They are intended to be a practical and pragmatic basis upon which the Council can begin to make decisions when faced with the need to balance competing priorities. The prioritisation should not be interpreted as indicating that lower priority schemes are not important to make development acceptable in planning terms, and developers will still be expected to make contributions to provide infrastructure needs as far as is viable.
    - **Integral** – Infrastructure that is required for the basic day-to-day function of developments, must therefore be provided and in non-negotiable. This typically includes connections to infrastructure networks and will often by triggered by the commencement of development.
    - **Fundamental** – Infrastructure that will mitigate impacts arising from development and which is necessary to meet the needs of residents and businesses, with significant inconvenience resulting if acceptable provision is not made. Fundamental schemes might also be needed to address wider societal pressures, such as the climate emergency. Such schemes will often be required upon the first occupation of new development and will therefore need to be planned well in advance.
    - **Beneficial** – Infrastructure that will help to achieve place-making and sustainability objectives and/or improve operational infrastructure capacity. Such schemes could be delivered at any time, and whilst developments and places might continue to be functional if provision is not made, there would be fewer wider benefits to society.
- **Source of scheme** – The infrastructure stakeholder, strategy or evidence base document through which the scheme has been identified.

2.3 Methodology and assumptions informing the infrastructure schedule

This section provides an overview of the methodology and approach used to establish schemes set out in the Infrastructure Schedule, where this has been more than curating and reporting the schemes identified by infrastructure providers themselves. This is the case for transport, education, utilities. The approaches taken within each topic are set out below for each in turn.

Approach to infrastructure costing

It was initially intended that Part 2 of the IDP would set out a proposed mechanism for the apportionment of the needs and costs of infrastructure between specific development sites. This would reflect the likelihood that requirements for new infrastructure may arise incrementally across a large number of sites. However, given the relative limitations on development viability established through the Whole Plan Viability Study[3] supporting the Sheffield Plan, it is anticipated that developer contributions could be relatively limited beyond that required through the Council's CIL charging. Accordingly, it has been established that a prescriptive cost apportionment approach between developers may not be appropriate at the current time.

The publication of the Government's consultation on the proposed Infrastructure Levy[4] in March 2023 is also relevant to consider. Whilst only a set of proposals at this stage, it is nevertheless indicative of the Government's direction of travel towards giving local authorities broader discretion around how pooled developer contributions are spent – and would represent a move away from case-by-case negotiations with individual developers. Depending on the Government's final response to this consultation and the resultant policy and legislative changes enacted, the Council may need to re-examine the potential need for cost apportionment in the future.

Our approach had also initially considered whether to set out indicative costs for different infrastructure schemes. At the present time, the Infrastructure Schedule does not include costs – for the following reasons:

- The incremental nature of arising infrastructure needs that we have established for some infrastructure topics means that many resultant schemes are indicative and subject to further monitoring and development before they can be firmly established. For such schemes, it is therefore not possible to establish a meaningful cost.
- The current inflationary environment, particularly within the construction sector, means that any established costs (even where only indicative) could quickly become out-of-date.
- In the absence of a prescriptive cost apportionment approach between developers, it is less important for costs to be established at this stage.

However, ongoing iteration of the IDP alongside the production of the Council's annual Infrastructure Funding Statements[5] (and any subsequent equivalent documents following on from

[3] Sheffield Whole Plan Viability Assessment 2022 (sheffield.gov.uk)

[4] Technical consultation on the Infrastructure Levy (www.gov.uk)

[5] Sheffield City Council Community Infrastructure Levy and Infrastructure Funding Statements (sheffield.gov.uk)

the potential introduction of the new Infrastructure Levy) should focus on the further development of schemes identified in the Infrastructure Schedule to provide further detail on what specifically is required. Where possible, this should include the identification of specific costs so that these can be factored into the Council's determination of planning applications and spending of developer contributions.

Transport

Work undertaken since Part 1 of the IDP was published in January 2023 has focussed on further development of transport modelling and further discussions to explore and establish appropriate mitigations. The Council has maintained a collaborative approach to engaging with key stakeholders to ensure that the latest position is understood, and that the impacts of growth have been fully assessed. The Council has also been able to respond to the consultation responses received as part of the Regulation 19 consultation.

The Council's position remains that the Sheffield Plan's strategy will facilitate a transport network that shifts away from a reliance on the private car towards more sustainable and integrated ways of travel. The strategy is predicated on decarbonising the network, creating a resilient and enhanced sustainable transport system, increasing connectivity by delivering '20-minute neighbourhoods', boosting accessibility by providing more opportunities for walking and cycling, and generating fairness by taking an inclusive, people-orientated approach.

The Council has undertaken significant assessment work to ensure there has been a thorough analysis of the impacts of the proposed growth set out in the Sheffield Plan. This includes technical transport and highways modelling; liaising with strategic partners to align and integrate investment; identifying any significant impacts on the existing transport network; and defining appropriate mitigation measures that can be funded and delivered to help realise a more sustainable and prosperous future for Sheffield.

The Council is proactively influencing discussions about how to improve the transport network at a national, sub-regional, and local level. The approach to delivering a sustainable transport network in Sheffield is fully outlined in the Sheffield Transport Strategy 2019-2034 and is reinforced through the Sheffield 'Way We Travel' Decarbonisation Routemap adopted in July 2023. These strategies aim to influence the existing and future travel behaviours and choices that current and future citizens and visitors make. The approach taken in the Sheffield Plan aligns fully with these strategies. Our evaluation of impact uses national forecasts for growth in vehicle trips within our reference case which our transport strategy and the impact of local policies programmes are aimed at reducing, therefore when development trips are also applied and mitigation is assessed, this is

considered a worst case at a citywide level and one that the Council is influencing in its programmes and policy decisions.

The Council also has a demonstrable track record of defining and delivering effective transport infrastructure projects that make a real difference to residents, business, and stakeholders across the city.

The following sections set out an update on technical work carried out to date, the issues and impacts facing the transport network due to the impacts of the Sheffield Plan, and the mitigation measures and future infrastructure provision that has (so far) been defined to support a more sustainable and resilient Sheffield.

Highways

The Council has carried out comprehensive transport modelling of the Strategic Road Network (SRN) and the Local Road Network (LRN). This modelling has been prepared in consultation with National Highways (NH) and all relevant Local Planning Authorities (LPAs). A transparent approach has been taken to the modelling, with the methodology and key assumptions shared with all stakeholders, and agreed where possible.

Overall, the modelling utilises the Sheffield City Region Transport Model[6] (SCRTM1), which is a strategic-level multi-modal transport model created by SYMCA and partner LPAs. The Council has also used more detailed Aimsun modelling, to carry out more detailed assessments of specific parts of the highway network and junctions. A breakdown of the parts of the network that have been appraised by which modelling tool, is set out below:

Aimsun

- SRN - M1 Junction 34 (North) / M1 Junction 34 (South);
- LRN - City Centre; and
- LRN - Lower Don Valley.

SCRTM1 / Local Junction Models / Other Tools

- SRN - M1 Junction 30 / Junction 31 / Junction 32 / Junction 33 / Junction 35 / Junction 35A / Junction 36;
- SRN – A616 from the M1 Junction 35A west, to Junction with A628; and

[6] Sheffield City Region Transport Model (sheffield.gov.uk)

- LRN – All areas outside of the City Centre and Lower Don Valley.

The SCRTM1 model has not previously been used for analysis at this level of detail, therefore several refinements and adjustments have been made in discussion with NH and LPAs. This includes:

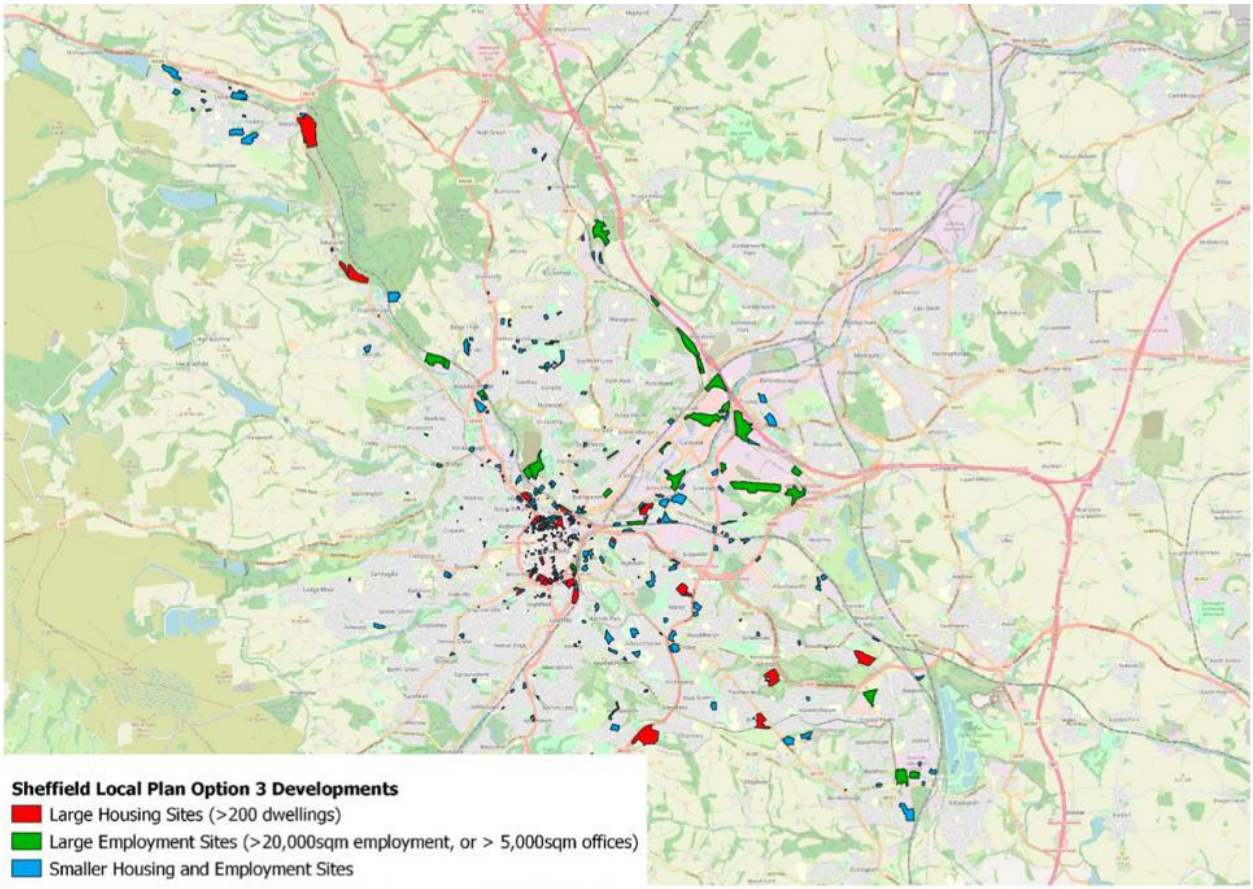
- Modification of the trip rates for local plan sites so that they are more closely matched to industry standards for quantifying trip generation values of new developments, via Trip Rate Information Computer System (TRICS), rather than using National Trip End Model (NTEM) figures;
- Adding network coding detail in the vicinity of the larger sites; and
- Checking and updating committed developments and infrastructure as reflected in the model.

Once these additional assumptions were added, the modelling was able to incorporate additional trip generation and trip distribution figures resulting from the development sites allocated in the Sheffield Plan. An overview of the development sites included in the model is shown in Figure 1 below.

The amendments to the SCRTM1 model and the methodological approach followed by the Council means that the modelling of trip rates represents the ‘worst-case’ scenario. As such, a conservative approach has been adopted where conclusions on impacts and options for mitigation account for the worst-case scenario.

Having regard to these development sites, ‘zones of impact’ have been assessed for two forecast years (2029 and 2039) focussing on a comparison with a ‘Reference Case’ scenario. The majority of results focus on the year 2029, since this is the year when mitigation requirements are most pressing, as it represents the first five-year period of the Sheffield Plan. The ‘Reference Case’ scenario includes committed land-use developments and transport schemes, which are independent of the scheme being tested, with overall demand for travel controlled to national forecasts (from Department for Transport). The model also analyses the cumulative impact of development on the transport network over the life of the Sheffield Plan. It should be noted that the strategic modelled outputs are still subject to agreement and sign-off by NH.

Figure 1: Overview of development sites assessed through the transport models



Source: Sheffield City Council - SCRTM1 Modelling (June 2023)

As noted, the Council has commissioned more detailed 'macro' and 'micro' simulation modelling of certain parts of the SRN and LRN, to better understand the implications of planned growth. The Council has used the Sheffield Area Aimsun Model V5 (SAAM) to model specific sections of the SRN at M1 Junction 34 (N) and (S); as well as parts of the LRN across the City Centre and the Lower Don Valley. This more detailed work has been carried out at the request of NH, in order to ensure that the model best reflects the current circumstances on the network. The outputs from this complementary work have then been incorporated back into the overall model, so that it can progress to a finer grain level of analysis.

It should be noted that the assessments are considered to represent a worst-case scenario in terms of traffic demand. The future year 'Reference Case' scenario forecasts do not include the representation of any transport interventions over and above already committed and funded interventions, nor the introduction of the policy proposals and mode shift proposals set out in the Sheffield Transport Strategy. Hence the model tests can be referred to as 'policy off' tests. Because of this, the strategic modelling does not capture the likely impacts of the land use policies and transport interventions intended to result in reduced trip lengths, as trips increasingly redistribute to

local neighbourhood destinations. Nor do they take account of the expected increase in the use of public transport or active modes resulting from improved provision of facilities.

Strategic Road Network

The results for the SRN are high-level, local plan-scale transport impacts as derived from the use of the strategic SCRTM1 model, and the more detailed modelling via Aimsun. It is also important to note that these results are preliminary, and have not yet been endorsed by NH.

In simple terms, the strategic model has appraised the impact of planned growth in the Sheffield Plan across 13 junctions of the SRN. These are set out in Table 2 below.

The detailed analysis of Junction 34 (North) and Junction 34 (South), which is being undertaken via Amisun modelling, is not yet finalised and is not included in the summary set out below. Initial data has been included within the overall assessment, but further work is necessary and will be completed as the Sheffield Plan progresses through the local plan-making process.

Table 2: Sections of SRN and Junctions modelled

SRN Section		Junction Name	Junction Type	Modelling Tool
M1	1	M1 Junction 30 (w A616 / A6135)	Roundabout (Grade-separated)	SCRTM1, Local Junction Models & Other Tools
	2	M1 Junction 31 (w A57)	Roundabout (Grade-separated)	
	3	M1 Junction 32 (w M18)	Free-flow Flyover (Grade-separated)	
	4	M1 Junction 33 (w A630)	Signalised Roundabout (Grade-separated)	
	5	M1 Junction 34 South (w A637 / A6178)	Signalised Roundabout (Grade-separated)	Aimsun
	6	M1 Junction 34 North (w A6109)	Signalised Roundabout (Grade-separated)	
	7	M1 Junction 35 (w A629)	Roundabout (Grade-separated)	SCRTM1, Local Junction Models & Other Tools
	8	M1 Junction 35A (w A616)	Free-flow Flyover (Grade-separated)	
	9	M1 Junction 36 (w A61 / A6195)	Signalised Roundabout (Grade-separated)	
A616	10	A616 / A61	Signalised Roundabout (At-Grade)	
	11	A616 / A629	Interchange (Grade-separated)	
	12	A616 / A6102	Interchange (Grade-separated)	
	13	A616 / A628	Roundabout (At-Grade)	

For each junction the impacts on transport demand, capacity, and mitigation requirements have been assessed for the following scenarios:

- The ‘Reference Case’ scenario (with no local plan development); and
- The ‘With Sheffield Plan’ scenario.

Capacity and the changes in vehicle flows have been recorded for the AM and PM peak period in the years 2029 and 2039.

Local Road Network

Impacts on the LRN have been assessed through two complementary pieces of work. The LRN within the defined City Centre and Lower Don Valley has been analysed via the use of more detailed Aimsun modelling; and the parts of the LRN which sit outside of the City Centre and Lower Don Valley have been analysed using the SCRTM1, Local Junction Models, and other tools.

As with the SRN, the transport demand, capacity impacts, and mitigation requirements have been assessed for the following scenarios:

- Reference Case scenario 2029 and 2039 – (with no local plan development); and
- With Sheffield Plan 2029 and 2039 (Option 3).

For those parts of the LRN being analysed via the SCRTM1, the assessment process was to first consider increases in traffic demand flows, and then the increase in volume over capacity levels of junctions across the modelled network. Results were compared between the Reference Case scenarios, and those scenarios that include the impact of the Sheffield Plan site allocations.

A sifting matrix was then used to identify the junctions that would require further analysis via the Local Junction Models. Those junctions included for further analysis were where the data showed:

- traffic demand increased by more than 10%, and volume over capacity increased by more than 10%;
- traffic demand increased by more than 10%, and volume over capacity remained unchanged; and
- traffic demand remained the same; and volume over capacity increased by more than 10%.

In addition, junctions considered to be of strategic importance to local traffic corridors and their proximity to site allocation were included by default. This was regardless of whether they were within capacity, nearing capacity or over capacity. This was done to attempt to include junctions which would likely be the subject of ongoing discussion throughout the local plan-making process.

Sustainable Transport & Active Travel

In addition to the highways modelling work, the Council has utilised the SCRTM1 to understand the impacts of the Sheffield Plan on the public transport network and how it will influence the active travel mode share across the city.

Additional travel by public transport and active modes (walking and cycling) resulting from developments identified in the Sheffield Plan has been quantified and analysed using the strategic model.

The demand forecasts are meaningful at the broad level, but less reliable at a local level (e.g. by bus stop) due to model limitations. The assessment of public transport and active travel mitigation measures necessary to support the Sheffield Plan considers wider policy aims and good practice, as well as modelling outputs.

Education

Recent engagement has taken place with school place planning officers within Sheffield City Council in its capacity as Local Education Authority. Those officers have undertaken modelling and analysis of pupil demand across all age groups.

Annual forecasts of school places are prepared using NHS data provided by age and postcode. Current migration patterns are applied to uplift or lower child numbers city wide and by area. The city-wide average picture (applied to 2022/23 forecasts) is 1.2% growth in the pre-school years, and 0.8% thereafter . The child level data is then compared to average numbers of pupils on roll within existing schools to project forward estimated numbers on roll for future year groups. This allows SCC to plan ahead for four years at primary level, and ten years at secondary level.

A School Capacity Review (SCAP) is then undertaken, looking at gaps between capacity and forecast place need and this is the tool used to assess the Council's basic need budget for creating new places. Pupil yield from new housing with planning permission is added at this stage at the rate of 3 pupils per year group per 100 new homes[7]. The need for special school places is more complex but this is to be captured as part of the SCAP process from 2024.

Assessing the need for childcare provision is undertaken through an annual childcare sufficiency exercise. Forecasting in detail cannot be undertaken in the same way as for school places due to the limited amount of future data available and the fact that take up of early years education is care is not compulsory; as well as the variety of provider types and the fact the early years provisions do not have catchment areas.

At Post 16 level forecasting is also more problematic with more cross border take up of places and much choice of A level, further education and training.

[7] See IDP Part 1, Figure 5 (page 43)

In terms of the demand arising from new developments in the Sheffield Plan, similar to existing committed development, it is assumed that development will yield 3 pupils per year group per 100 new homes. However, when assessing the overall growth in pupil numbers on a city-wide basis it is also necessary to consider that some of new occupants will be families moving from within the city, and the children of these families will therefore already be included within current pupil planning forecasts in another area. SCC's modelling therefore assumes that 40% of occupants within new development will be new to the city.

In addition, a recent study has shown that the pupil yield generated by new developments over the last 10 years has varied in different areas of the city, with different demographics and characteristics that in turn impact the types of home built. Further work is in development which may lead to use of variable pupil yields in the future when forecasting pupil growth from housing on a planning area basis. Currently, SCC's modelling assumes that 80% of new dwellings are of a size that yield pupils at a rate of 3 per year group per 100 homes.

At this stage, only the total number of dwellings to be allocated in the Sheffield Plan is known. This means that it is not possible to calculate the pupil yield with accuracy until plans detail the type and size of homes to be developed on a site. This also reflects the inevitability that the location of windfall development on sites not being allocated in the Sheffield Plan cannot be known.

Utilities

To provide a more detailed understanding of infrastructure impacts for Part 2, it has been necessary to model estimates of demand for utilities. The approaches to doing so are set out below.

Electricity and heat

To calculate heat demand, consumption benchmarks were used based on industry standards and past project knowledge. Average values were calculated for maximum heat demand in kW, and annual heat consumed in kWh. For the purposes of these assessments, it has been assumed that each dwelling will have two occupants. For a two-person residential dwelling, the maximum heat demand is estimated to be 3.5 kW with an annual heat consumption estimated to be 6,000 kWh. These values have been multiplied by the number of dwellings in each development to calculate the overall peak heat demand and annual heat consumption.

Across the city as a whole, the sites in the Local Plan result in a peak heat demand of 60MW and an annual heat consumption of 110,000MWh. The peak heat figure assumes that all sites draw their demand simultaneously, which is to be expected with most sites being residential and hence having

similar usage characteristics (e.g. all homes in the city are likely to require simultaneous heating during winter evenings).

Information on current and predicted electrical demand is available via Northern Powergrid's (NPg) website[8]. This is split between local authority regions and so can be filtered down to the city of Sheffield. With regards to domestic electricity consumption, there is information available on the peak demand in MW, number of heat pumps installed and number of electric vehicles in use. The data available was based on recorded values in 2021 through to predicted values up until 2050.

We have compared locations of proposed development and demand estimates to various published NPg demand scenarios, available via its open data portal. These demand and supply scenarios consider a range of possibilities based on the extent to which decarbonisation targets are met and reflect wider electrical demand dynamics as well as heat. There are five scenarios as defined in NPg's Distribution Future Energy Scenarios:

- NPg planning scenario – reaches net zero earlier than government prescribed 2050 target (approx. 2040-45) with highly accelerated electric heat & transport and highly decentralised distributed wind, solar and other renewable energy generation.
- Leading the way – 100% full decarbonisation achieved by 2047. This is considered by NPg as the fastest credible full decarbonisation timescale, more ambitious than its planning scenario with the removal of all carbon from the energy system. This scenario is reliant on significant lifestyle change, with a mixture of hydrogen as well as electrification for heating.
- System transformation – 100% full decarbonisation achieved by 2050. Hydrogen is the primary basis for heating with consumers less inclined to change behaviour, resulting in lower energy efficiency and supply side flexibility.
- Consumer transformation – 100% full decarbonisation achieved by 2050. Consumers willing to change behaviour result in a shift to electrified heating, with higher energy efficiency and demand-side flexibility.
- Falling short – only 80% decarbonisation is achieved by 2050. Behavioural change is minimal, with decarbonisation in power and transport but not heat.

The NPg planning scenario is assumed to be the intended growth approach for NPg, whilst 'falling short' represents the worst case scenario. The three of these demand scenarios considered to be the

[8] www.northernpowergrid.com

most realistic and likely to occur are compared in the diagrams below, which show values for Sheffield for each variable being considered.

Figure 2: Peak demand in MW from 2021 to 2050 for each future energy scenario

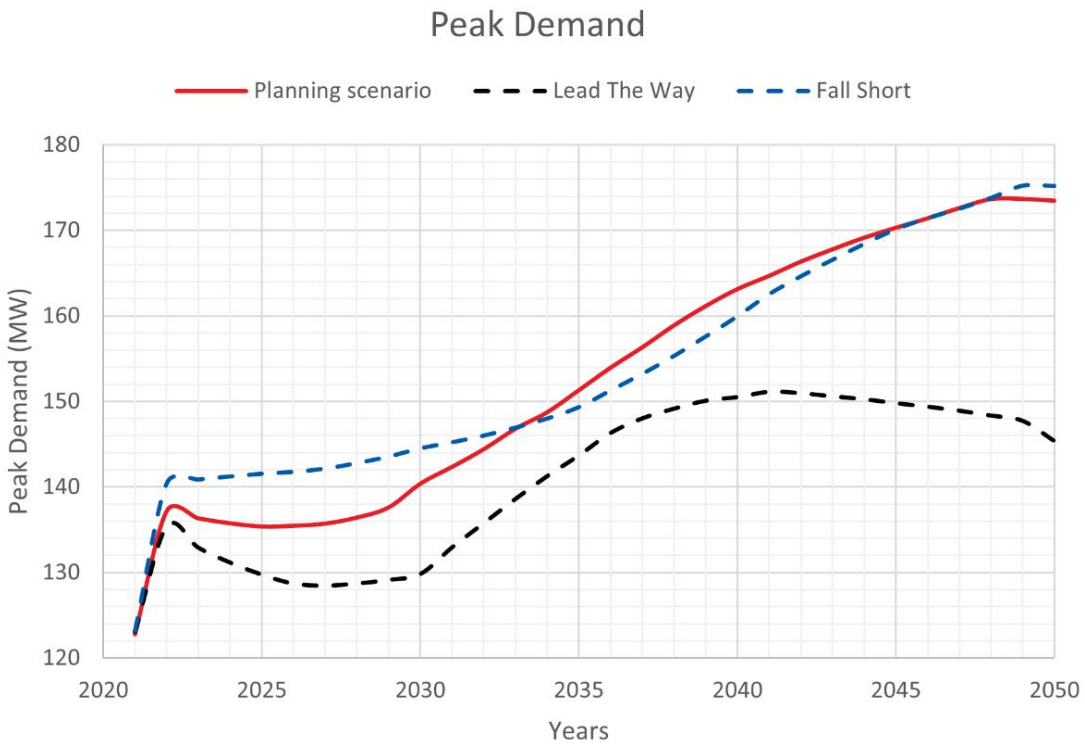


Figure 2 shows the predicted increase in peak demand until 2050. The 'lead the way' scenario has the smallest increase in peak demand, reflecting the ideal heating scenario being a mix of hydrogen heating and electrified heating, resulting in a lesser increase in peak demand. However, the NPg planning scenario assumes a larger ratio of electrified heating to hydrogen heating, making a greater increase in peak demand more likely, to around 175 MW by 2050.

Figure 3 below shows that the number of heat pumps currently installed in Sheffield is close to zero and sets out how that could be anticipated to increase in each future energy scenario until 2050. The 'fall short' scenario would lead to the installation of less than 15,000 heat pumps by 2050 across the city, whereas it is assumed that the 'lead the way' and NPg planning scenarios would result in around 25,000 heat pumps by 2050. As with overall peak demand in Figure 2 above, the 'lead the way' scenario results in less electrified heating than the NPg planning scenario due to its assumed integration of hydrogen for heating.

Figure 3: Number of heat pumps installed from 2021 to 2050 for each future energy scenario

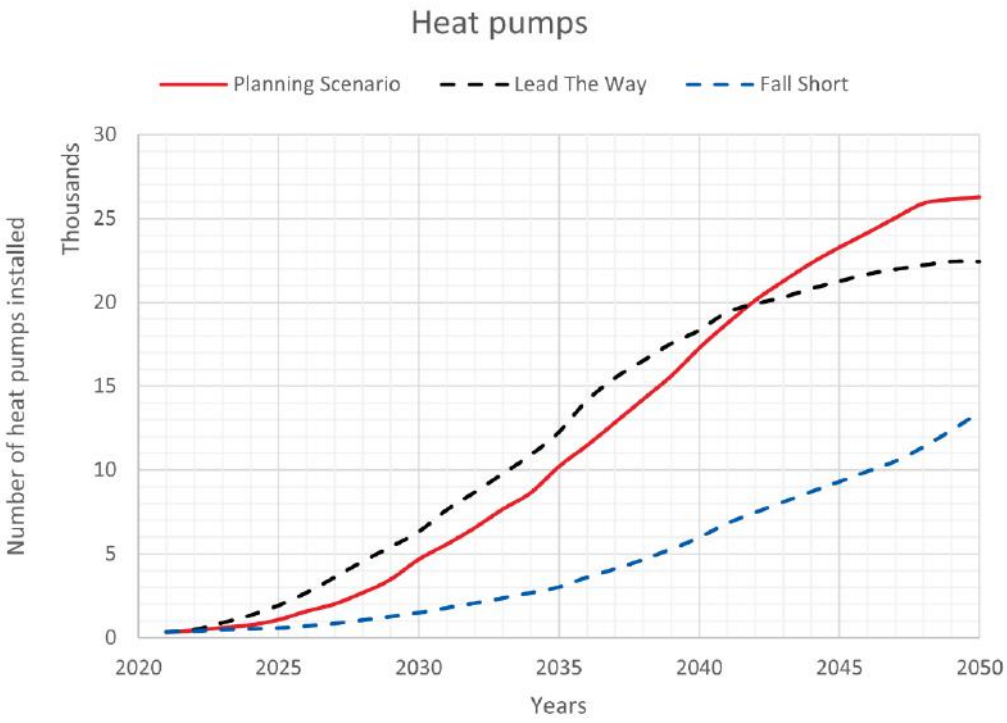


Figure 4 below shows assumptions around the take up of electric vehicles in each scenario. The 'lead the way' scenario predicts a faster take-up of electric vehicles driven by behavioural change, with a subsequent decrease in use from around 2040 onwards as hydrogen begins to play a greater role in transport energy. The 'fall short' and NPg planning scenario both show a levelling off in the take-up of electric vehicles by 2050.

Figure 4: Number of electric vehicles in use from 2021 to 2050 for each future energy scenario

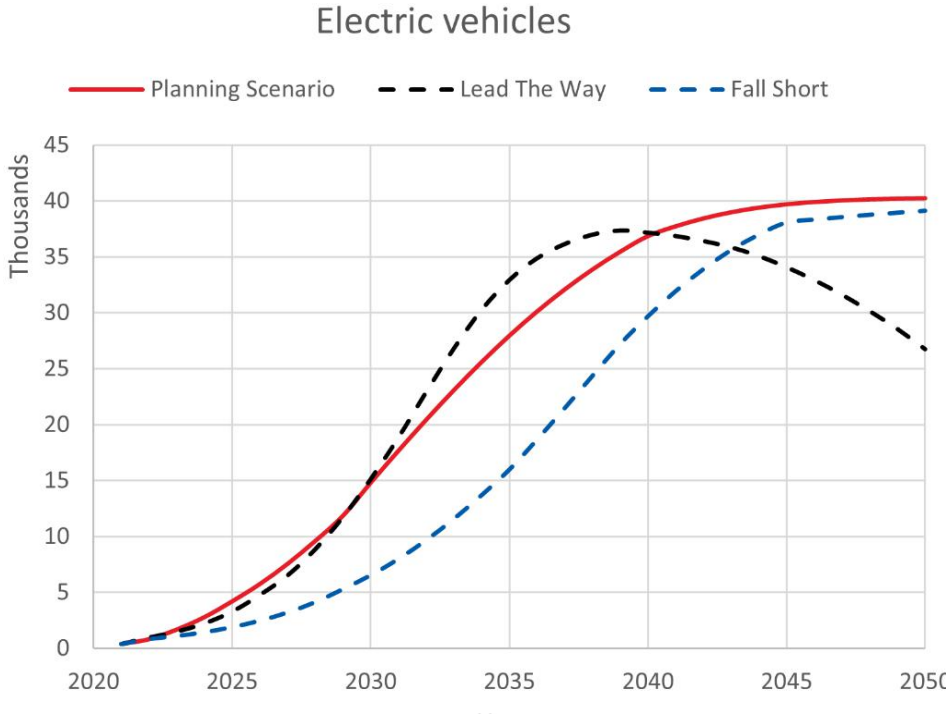


Figure 5 below sets out assumptions around the take-up of domestic photovoltaic cells for energy generation. The NPg planning scenario matches the 'Lead the way' scenario with regards to the rate of installation of domestic PV predicted until 2050. To enable demand side flexibility, the installation of individual domestic solar installations needs to increase to meet peaking and reduce the required capacity on the supply side.

Figure 5: Installed capacity of domestic PV from 2021 to 2050 for each future energy scenario

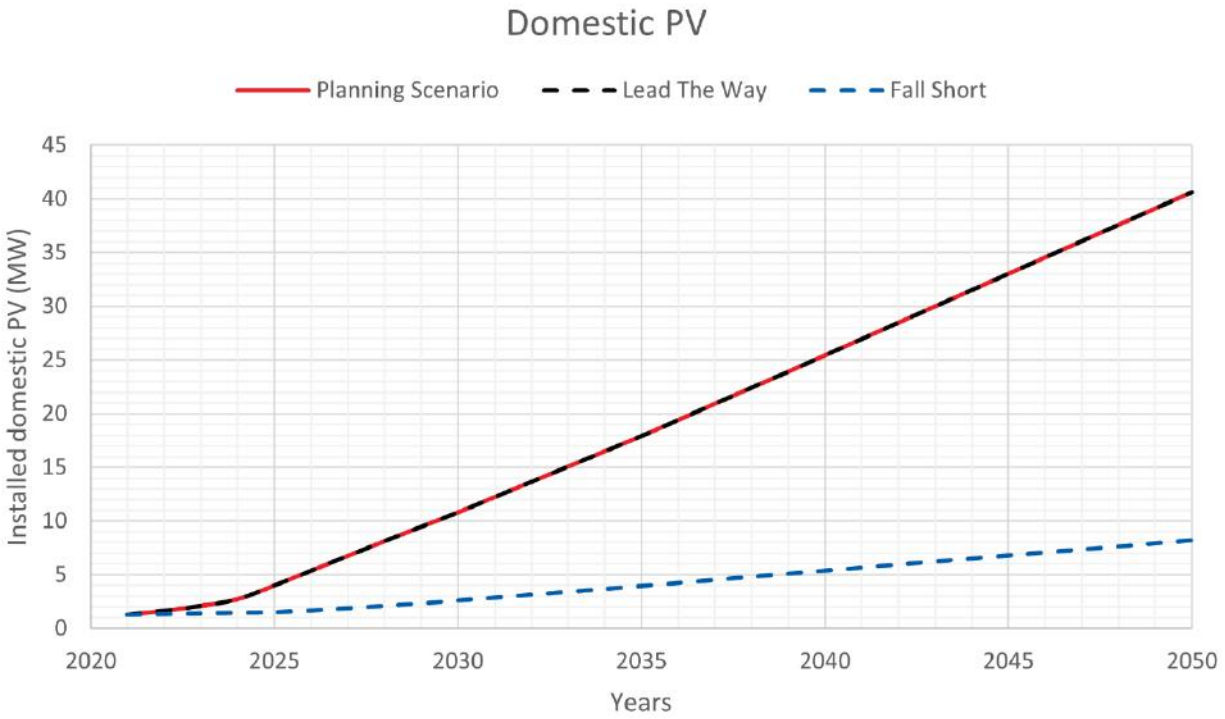
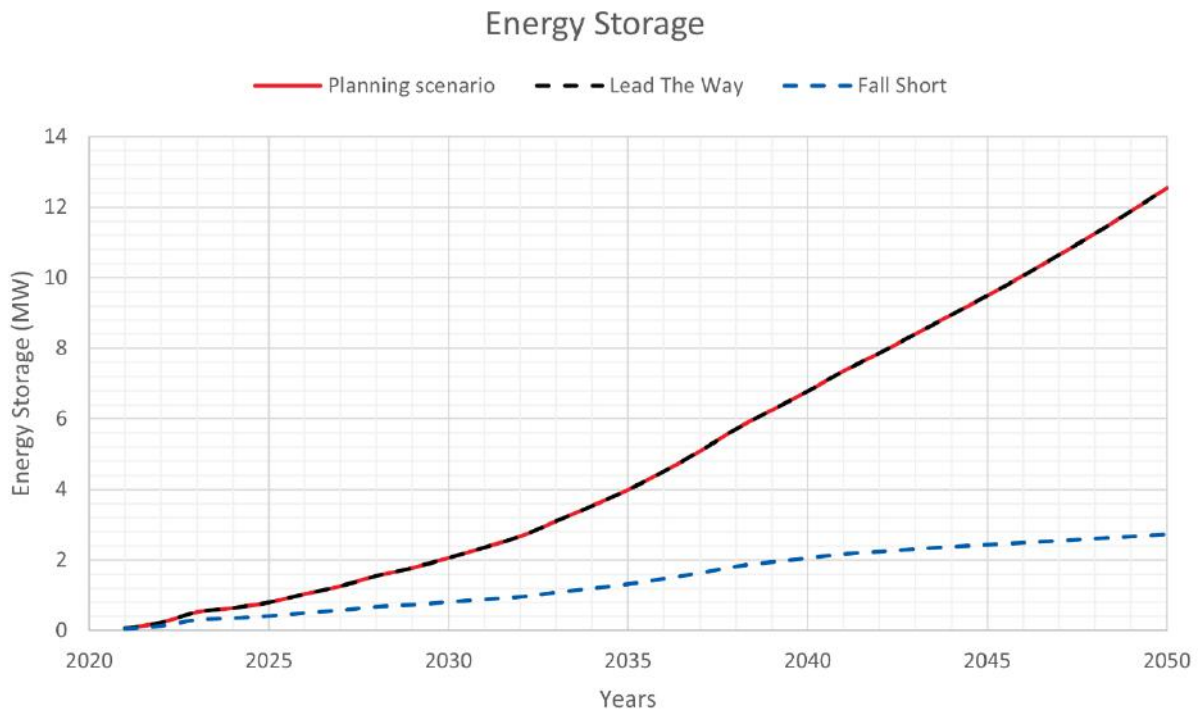


Figure 6 sets out the expected increase in the usage of energy storage through to 2050. Again, the 'lead the way' scenario matches the NPg planning scenario with a gradual increase over time.

Figure 6: Energy storage capacity from 2021 to 2050 for each future energy scenario



From these scenarios, the implications of the NPg planning scenario are taken forward and presented visually through the heatmaps in Chapter 3. This scenario is used because this is the scenario NPg deem most achievable whilst still meeting net zero requirements. It is the scenario NPg are actively planning for and working towards and is therefore the most likely to happen.

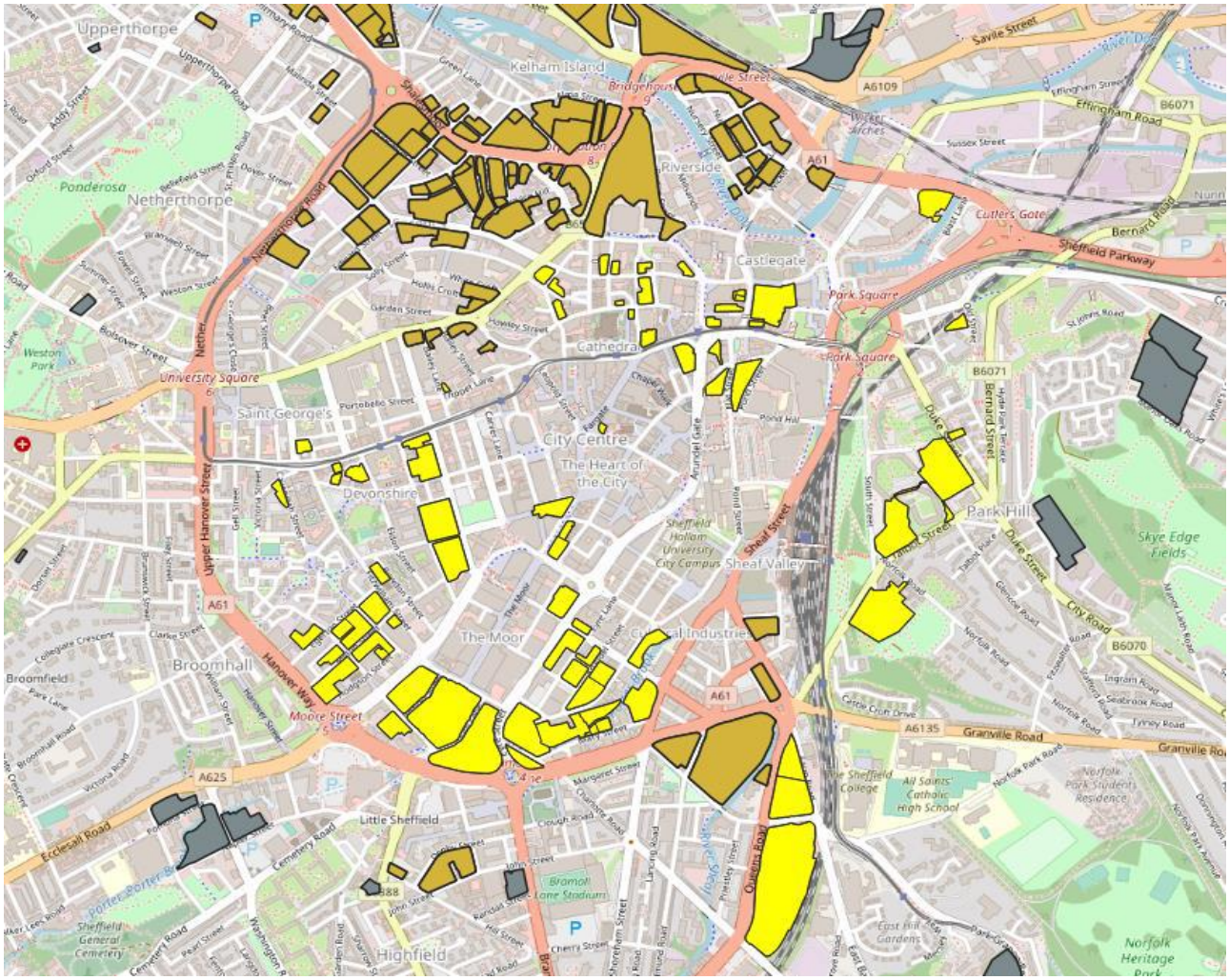
The heatmaps in Chapter 3 compare the overall citywide demand for each variable as well as more detailed analysis on the central area, given the particular concentration and density of development anticipated in this relatively small geographical area. This has enabled comparison between the predicted growth in demand based upon NPg's demand scenarios and current electrical and thermal headroom availability.

Estimated heat demand has also been shared with Veolia, as the operator of the Sheffield Heat Network in the central sub-area. To further model potential impacts on demand for the heat network, geospatial data showing the planned developments in the city centre was compared to the specific routes of the network. From this a visual assessment was completed, identifying which sites are realistically likely to lend themselves to connection into the heat network by virtue of their proximity and scale. Using Geographic Information Software (GIS) to map the developments, the appropriate connecting developments could be 'selected' to calculate the increase in heat demand connecting those developments would lead to.

Figure 7 shows the outputs of these assumptions which were shared with Veolia. Sites shaded lighter yellow were assumed to be more readily able to connect to the network by virtue of

immediate proximity, whereas sites shaded darker yellow are slightly further from the existing heat network albeit still considered reasonable to connect. Sites shaded grey were considered to be located too far from the heat network to be reasonably able to connect, although not technically impossible should that ever be desired. These assumptions have been used by Veolia in their assessment.

Figure 7: Sites in the central sub-area considered potentially able to connect to the Sheffield Heat Network



Water

Average benchmarks for potable water demand were also calculated using industry standard values. For a two-person residential dwelling, the average water demand is estimated to be 220 litres per day with annual consumption estimated to be around 80,000 litres[9]. These values have been multiplied by the number of dwellings in each development to calculate the overall daily and annual water demand.

[9] To note: Sheffield Plan Policy ES4 limits potable water consumption to 110 litres per day.

Across the city as a whole, the sites in the Local Plan have been forecast to result in an additional daily water demand of 4 million litres and an annual water demand of 1.46 billion litres.

These figures have been shared with Yorkshire Water with the intention to discuss them and explore the implications of the calculated demand, with a view to understanding implications both in terms of water supply capacity and sewerage capacity. However, it has not been possible to obtain a specific response from Yorkshire Water related to the implications of the calculated portable water demand.

At meeting in January 2023 Yorkshire Water did identify potential challenges around demand placed on the combined sewer system in the central sub-area. Whilst this was not identified as an insurmountable issue, it is nevertheless an issue that will need to be addressed during the lifetime of the Sheffield Plan. It should therefore remain an area of ongoing focus as the plan begins to be implemented.

Discussions have taken also place with Severn Trent Water which provides water to a small part of the south-east of the city. The outcomes of this are reflected in Chapter 3.

3. Updates to the infrastructure baseline in IDP Part 1

Part 1 of the IDP was published in January 2023, and reflects engagement undertaken with infrastructure stakeholders between October and December 2022 prior to the Regulation 19 publication of the Sheffield Plan. As such, there have inevitably been some developments and changes of circumstance beyond the baseline positions set out in the Part 1 Infrastructure Needs Assessment. As noted within Section 2.1 above, there are also some infrastructure providers for which Part 2 has been the first opportunity to obtain information about baseline infrastructure needs.

Where changes have been identified these are set out below. These are by exception, meaning that the updates below should be read in conjunction with Chapter 4 of the Part 1 report. This section also only reports changes relevant to the strategic baseline position for each infrastructure topic. Where changes relate to individual schemes, these are set out within Chapter 4 and the Infrastructure Schedule in Annex A.

3.1 Transport

Since the publication of the Part 1 IDP report there has been a significant number of updates to the context for transport planning within Sheffield, both in terms of ongoing modelling work prepared specifically to provide the evidence base to support the Sheffield Plan; and in terms of the development of transport schemes by SCC and other partners to deliver infrastructure improvements in the city. The following sections set out a summary of the evidence that has emerged from the ongoing transport modelling, updates to specific transport infrastructure schemes, and updates on collaborative working.

Highways - Strategic Road Network

Link Flows and Capacity

Analysis of traffic flows and capacities was undertaken for all the SRN links. The assessment takes account of each link's existing capacity and base flows and seeks to appraise the differences and changes between the 'Reference Case' scenario and the 'With Sheffield Plan' scenario.

The change in volume over capacity for each junction was calculated in percentage terms, with 100% representing that a junction is 'at capacity'. This calculation was made for each of the scenarios for 2029 and 2039.

Where a link shows an increase in volume over capacity, in either peak hour, that is higher than the 85% desirable threshold, this may indicate there are capacity issues. Interestingly, the analysis

shows that it in most cases the increase in volume over capacity is marginal, being in the range of 1 - 4% points.

Based on the initial outputs from the transport modelling, there are five SRN links where the rate of change exceeds these levels. These are:

- M1 Junction 34 (South) (On Slip Road: Merge) – evening peak hour;
- M1 Junction 34 (North) (On Slip Road: Merge) – evening peak hour;
- M1 Junction 34 (North) (Off Slip Road: Diverge) – morning peak hour;
- M1 Junction 35A (At Junction) – evening peak hour; and
- M1 Junction 35A - M1 Junction – evening peak hour.

Merge / Diverge Assessment

To determine the likely effect of proposed development in the Sheffield Plan on the operation of the M1, assessments at Junctions 30 to 36 of the M1 were based on 'merge and diverge' standards and the potential need to improve merge and/or diverge standards at one or more locations. This assessment was carried out for the M1 Corridor - both Northbound and Southbound – across the 'Reference Case' scenario and 'With Sheffield Plan' scenario, and for the years 2029 and 2039.

In summary the 'merge and diverge' assessment shows that there is one possible upgrade required in 2029 as a result of proposed development in the Sheffield Plan, this is at M1 Junction 33 - Northbound On-slip Merge (for the evening peak hour). The assessment shows the same junction would require upgrades in 2039 for both the morning peak hour and the evening peak hour.

Junction Impacts

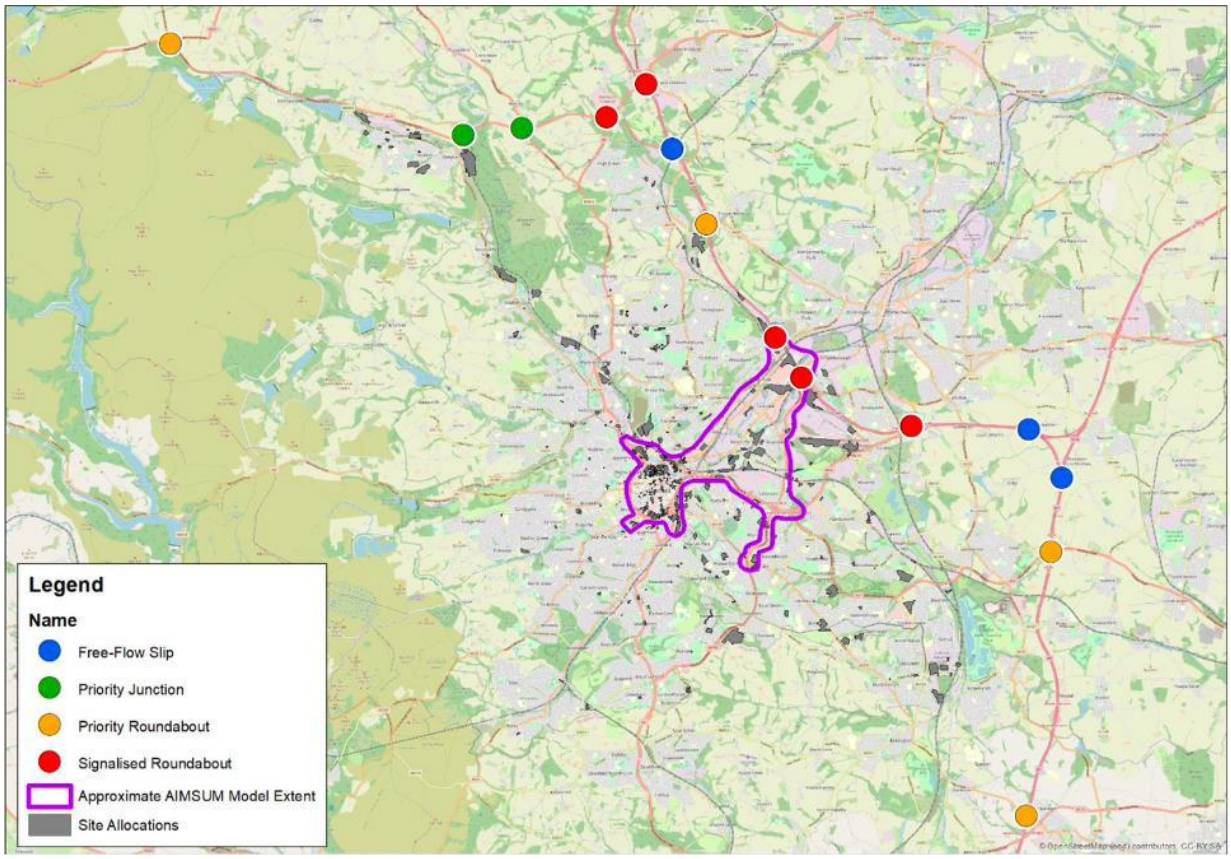
As noted, the modelling has assessed the impacts on 13 junctions of the SRN, nine of which are on the M1, and four are related to the A616. The junctions assessed are shown in Figure 8 below.

M1 Junction 34 North and 34 South are part of the AIMSUM modelling work, which is ongoing, and so is not included within this report.

M1 Junction 32 and M1 Junction 35 were not assessed using traffic modelling due to them being free-flow junctions. Instead, they have been assessed using merge / diverge assessments. In addition, the A616/A628 junction was also discounted following initial strategic modelling that illustrated the cumulative number of development trips associated with the Sheffield Plan was not enough to warrant dedicated local junction assessments at this location.

Finally, it should be noted that the appropriate assessment process for M1 Junction 36 (w, A61 / A6195) is still being confirmed with NH, and so has not been carried out so far. This further work will be completed, in collaboration with NH, as the Sheffield Plan progresses through the local plan-making process.

Figure 8: SRN junctions assessed for transport modelling



Source: Sheffield City Council - SCRTM1 Modelling (June 2023)

In order to carry out an appropriate assessment, it should be noted that there is a known improvement scheme for M1 Junction 30. Although the scheme is not fully committed, it has been agreed with NH that the operation of this junction should be tested with the improvement scheme in place.

Local junction capacity assessments have utilised 'Junctions 10' and 'LinSig' software tools to conduct a more detailed review of the potential impacts associated with the Sheffield Plan. The junction modelling assessments indicate that, while there are several junctions currently operating over capacity in the 'Reference Case' scenarios, there are only two junctions impacted by trips generated by development proposals in the Sheffield Plan. These are:

- A616 / A61; and
- A616 / A629.

Highways - Local Road Network

Flows and Capacity Impacts

For all roads within the LRN, the modelling presents the forecast peak hour link flow changes between the Reference Case and the Sheffield Plan scenarios, for the morning peak and evening peak hours in 2029 and 2039.

Flow changes are shown in passenger car units (PCUs) per hour (pcus/hr). The scale of flow change that would be considered to be problematic depends on the specific location and circumstances. As an approximate guide, a flow increase of more than 100 pcu/hour could be considered significant although less so on high-capacity roads such as motorways and dual carriageways.

Flow increases of this scale through to 2029, as a result of the impacts generated by the Sheffield Plan are:

- Inner Ring Road – all sections;
- A630 Parkway – all sections;
- A61 Penistone Road and A6102 Herries Road;
- A6102 Middlewood Road;
- A631 Shepcote Lane and A6178 Sheffield Road– all sections; and
- A57 Mosborough Parkway.

By 2039, flow increases can be seen in the same locations, but generally to a larger degree. In addition, significant increases in flows can be seen on:

- A6135 City Road and Mansfield Road.

Link Capacity Impacts

Analysis was also undertaken of all dual carriageway / grade-separated roads beyond the SRN. This assessment followed a similar methodology to that described above, by taking an understanding of the existing link capacity and base year flows and comparing the base year with ‘Reference Case’ scenarios and the ‘With Sheffield Plan’ scenarios, and then considering the impact on volume over capacity.

The modelling of link capacity impacts shows that only the A630 Sheffield Parkway is significantly affected by the Sheffield Plan traffic in 2029. In the evening peak hour there are increases in the volume over capacity at other locations, they are:

- Eastbound between city centre and A6102 junction (where volume over capacity increases from 85% to 91%);
- Eastbound between A57 Interchange and Handsworth Interchange where volume over capacity increases from 83% to 89%); and
- Eastbound between Europa Link and M1 Junction 33 (where volume over capacity increases from 84% to 96%).

However, importantly all those links' capacities remain under 100%.

In 2039, the volume over capacity ratio increases on every section of A630 Sheffield Parkway, in both directions, and in both time peak periods. The section most affected is the eastbound section between Europa Link and M1 Junction 33, where in the evening peak hour the volume over capacity increases from 87% to 101%. Further assessment of the benefits of the recent Parkway Widening Major Highway Improvement Scheme is to be undertaken to ensure that these are fully represented in the capacity analysis.

Junction Capacity Impacts

From this exercise, 42 LRN junctions were identified as having congestion that increased from within or nearing capacity to over-capacity, or were likely to experience significant increases in congestion. Local Junction Modelling was then carried out via the use of 'Junctions 10' and 'LinSig v3' software to provide a more detailed assessment of impacts.

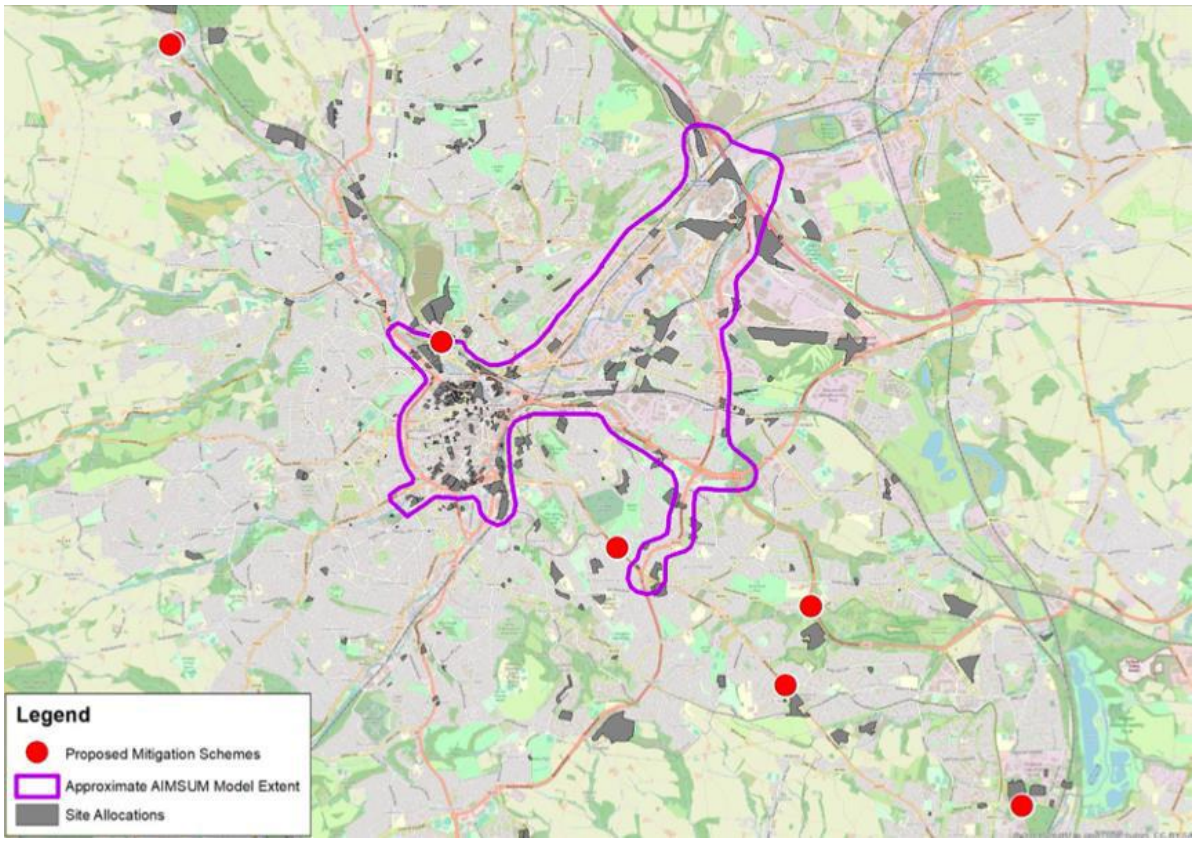
The 42 junctions identified were grouped by their geographic location, which corresponds to the relevant 'sub-areas' defined in the Sheffield Plan. In summary, for each of the 42 junctions the analysis sets out whether, as a result of the planned growth in the Sheffield Plan, a junction would have a ratio of flow to capacity (for uncontrolled junctions) or a degree of saturation (for signal controlled junctions) figure of less than 85%, of between 85% and 99% (which was taken to illustrate that the junction is approaching its operational capacity), or 100% or over (which illustrates that operational capacity of the junction is exceeded and increased vehicle queuing and delay are likely to occur).

Taking account of the analysis, the modelling indicates there are seven junctions where operational capacity is exceeded as a result of the Sheffield Plan development, and therefore requiring mitigation schemes to be developed. These are also shown in Figure 9 below:

- A6135 City Road / Wulfric Road (South Sub-Area);
- Station Road / New Street (South Sub-Area);

- Birley Moor Road / Occupation Lane (South Sub-Area);
- Mosborough Parkway / Coisley Hill (South Sub-Area);
- Langsett Road North / Church Street (Northwest Sub-Area);
- Orchard Street / Station Lane (Northwest Sub-Area); and
- B6070 Rutland Road / Boyland Street (Northeast Sub-Area).

Figure 9: Map showing LRN junctions identified as requiring mitigation measures



Source: Sheffield City Council - SCRTM1 Modelling (June 2023)

Finally, the SCRTM1 also accounts for other complementary mitigation measures that will improve the LRN. This includes the fact that Council has implemented a Clean Air Zone. This position is underpinned by Policy SA1 and Policy CO1 in the Sheffield Plan.

As of 27th February 2023, the Clean Air Zone is operational. It aims to reduce exposure to nitrogen dioxide (NO2) produced by road traffic, to protect public health in areas where pollution levels exceed the maximum legal level. The Clean Air Zone covers the inner ring road and all roads inside it. A map of the area covered by the Clean Air Zone can be found here: https://sheffieldcc.maps.arcgis.com/apps/webappviewer/index.html?id=209bfe53e5b34c06878e0f0d6c39ee88

Sustainable Transport

Modelled Impacts

The Sheffield Plan development sites are forecast to increase daily public transport demand by around 31,000 one-way trips in 2029, and nearly 40,000 one-way trips in 2039.

The most significant impact on public transport is increases in passenger demand on the Supertram network due to the concentration of development sites along it. Forecasts indicate increases of up to 16 passengers per tram on the Meadowhall line (for context, each tram has a capacity of around 250 passengers, meaning an expected increase of approximately 6% of total capacity).

There is a clear focus of additional public transport demand in the city centre, which is already well served by public transport. Outside of the city centre there is limited additional public transport demand in the vicinity of rail stations. There are several Supertram stops with the potential to attract significant additional ridership. The largest increase in demand is around 450 one-way trips per hour at West Street, by 2039, which is approximately the capacity of two tram vehicles.

The Council has shared these initial results with SYMCA to consider opportunities for enhancing Supertram services and / or investing in stop facilities. These will be considered as part of the ongoing development of major upgrades to the Supertram network to address major maintenance requirement, and also as part of the further development of the case for network growth.

Active travel demand is forecast to be widely dispersed, albeit with a general focus in the city centre. There is a cluster of around 1,200 planned dwellings and 32,000sqm mixed use floorspace south of St Mary's Gate, which is the area expected to generate the largest volume of active travel demand.

It is anticipated that significant active travel demand will also be generated by a leisure development at the site of the former Sheffield Ski Village, and by an office development at the Olympic Legacy Park in Attercliffe.

Other Rail Matters

Enhancing the rail network across Sheffield and the wider city-region remains fundamental to realising modal shift, encouraging behavioural change, and helping to decarbonise the transport network by shifting significant volumes of trips away from the private car.

The Council has continued to engage with Network Rail, SYMCA, and Train Operating Companies (TOCs) about the future of the network across the local authority area. The Council and stakeholders are committed to both a long-term and short-term strategy to position Sheffield so that it can realise the objectives set out as part of plans for the Integrated Rail Plan (IRP) and High

Speed 2 (HS2), as well as opportunities to reinstate important local rail connections in the city and region.

To help bring coherence to the numerous interconnected projects and schemes that will affect the rail network in Sheffield and the surrounding sub-region, key stakeholders are developing a Sheffield 'Single Rail Strategy'. The main principle of the strategy is that all the schemes need to be considered together, not only to work towards getting things right at the first attempt, but also to maximise efficiencies in funding and delivery given that rail infrastructure schemes are expensive and time-consuming. Equally, the strategy identifies those shorter-term measures that can delivered in preparation for the major national and sub-regional scale projects like IRP and HS2; including whether there is a greater opportunity for light rail integration to facilitate shorter distance commuting.

Sheffield Midland Station remains pivotal to plans for how to reconfigure the rail network, being an important terminus and through station for long-distance, inter-urban and local passenger services, along with freight operations through the area. However, the station is a very restricted site due to geography, listed buildings, the road network and access to the nearby depot. This makes expanding or reconfiguring the station area to support an increase in services or train lengths difficult.

Network Rail's *'Sheffield Area Strategic Advice Refresh'* (October 2022)[10] notes that the short section of two-track line immediately north of the station to Nunnery Main Line junction is heavily utilised and the potential for additional tracks is limited due to it being in tunnels, cuttings and under buildings and other structures. Ensuring access to the depot is a key constraint to the south of the station, and there are similar constraints of bridges and tunnels, albeit with more space than at the northern end.

The Council remains committed to the Sheffield Midland Station and Sheaf Valley Development Framework, noting that the station area offers a transformational regeneration opportunity to drive sustainable and inclusive growth, maximise the benefits of transport investments and improve the lives of people and communities.

The Council is collaborating with Network Rail and Northern to understand how to optimise the future of the station, including how best to respond to new rolling stock and the planned provision of longer trains. The benefits of new rolling stock will be to deliver a cleaner, greener railway; helping to decarbonise the transport network. However, a consequence is that the existing depot (which is already at capacity) will not be able to accommodate the new rolling stock. The Council is

[10] Sheffield Area Strategic Advice Refresh October 2022 (networkrail.co.uk)

engaged in ongoing dialogue with Northern and Network Rail to find an appropriate location for a new depot. As noted above, areas to the north of the station are constrained, and so options for a new depot to be located south of the station, which can meet operational needs and respects broader regeneration aspirations are being explored.

In addition to the specific proposals at Sheffield Midland, the Council continues to push the agenda for how the rail network in Sheffield can be at the heart of the Integrated Rail Plan, Northern Powerhouse Rail, Electrification of Midland Mainline to Sheffield, and ultimately any plans for High Speed 2. These discussions also feature greater integration between heavy rail and tram-train services, as well as other rail investment as part of re-opened lines (see discussion on Restoring Your Railway below), and enhanced freight services.

Since the IDP Part 1, significant progress has been made in relation to the Restoring Your Railways (RYR) scheme, and the two projects within Sheffield.

In relation to the Barrow Hill Line, the project has now received a recommendation to advance to the preparation of a Full Business Case (FBC). The project will re-open the rail line between Sheffield Victoria and Chesterfield. In terms of specific infrastructure requirements, the scheme will result in the delivery of two new stations at Beighton and Killamarsh, as well as a new station at Waverley (in Rotherham). These proposals are supported by the Sheffield Plan at Policy SP1, Policy SA2, Policy SA5, and Policy T1.

Network Rail has also confirmed that there has been good progress on the second potential RYR project – the Don Valley Line. The project would re-open the rail line from Stocksbridge to Sheffield Victoria. Network Rail has confirmed that it will now proceed to Outline Business Case (OBC) where further technical analysis will take place. These proposals are supported by proposed amendments to Sheffield Plan at Policy SP1, Policy SA2, and Policy T1.

Other Tram / Tram-Train Matters

As identified in the Part 1 IDP report, the Council and SYMCA continue to support the long-term role of the tram and development of a tram-train network across Sheffield and the sub-region. The ability to shape and influence its role within an integrated transport network will be strengthened by SYMCA taking control of the management and operation of the service after the existing franchise ends in March 2024.

Since the IDP Part 1, SYMCA has secured a £100m funding grant that will deliver a modernised network, with improvements to track, supporting infrastructure, and the provision of better passenger facilities. SYMCA has also issued an invitation to tender for the supply and installation

of an overspeed protection system to be fitted to the Supertram fleet of 25 Siemens trams and seven Stadler tram-train vehicles.

Other Bus Matters

Since April 2020, Department for Transport (DfT) has been providing bus operators and Local Authorities with support funding through the Bus Recovery Grant (BRG)[11]. This has been extended several times, with the most recent extension running from 1 April 2023 to 30 June 2023. This funding has allowed stakeholders to maintain a level of bus service which would otherwise have been subject to operators reducing services to only those which are commercially sustainable.

SYMCA previously agreed to make use of financial reserves of up to £7.2m to protect bus services in the period October 2022 to end of July 2023. Alongside this, £5.1m of reserves were also committed to support non-statutory school bus services from September 2022 to July 2024. On that basis, SYMCA is planning to implement a financially sustainable tendered service bus network from 23 July 2023, at a level which can be afforded, using agreed revenue budget funding and supplemented where appropriate with the use of available reserves.

On 17 May 2023, DfT announced the continuation of bus support funding, with £300m being made available nationally from 1 July 2023 to 31 March 2025. At the same time, DfT also announced an extension of the £2 fare cap on bus to 31 October 2023, with it then rising to £2.50 through to 31 October 2024.

DfT has now confirmed SYMCA's funding allocation for 2023/24 will be £3.15m. This is a higher allocation than most of the other Combined Authority areas, but significantly less than current funding (allocation represents approximately 55% of existing). At a meeting of SYMCA in June 2023, the funding allocation was stated to be insufficient given the scale of spending pressures. Furthermore, a similar allocation is expected for the period 2024 / 2025. The allocations provided pose the risk that bus operators look to further reduce their commercial network, and as a result put even greater pressure on the available budget to buy back more services through tendered contracts.

To devise a strategy for best managing the future of the bus network, SYMCA has confirmed it will undertake a short review of options, to agree the priorities for both bus service protection, but also fares and concessions initiatives. Soon SYMCA will be formally considering the results of an assessment of a Franchised operating model should be taken forward in South Yorkshire or whether the current Enhanced Partnership operating model should continue. Subject to this decision further

[11] Bus Recovery Grant (gov.uk)

changes to the way in which the bus network will be delivered will be developed over the medium term.

Elsewhere, in addition, SYMCA and the Council are proceeding with the Strategic Business Case for the Meadowhall Interchange Mobility Hub. This will be facilitated through City Region Sustainable Transport Settlements (CRSTS)[12] funding with an indicative scheme cost of £6,667,739, with SYMCA contributing £266,710 in development costs.

The scheme is to deliver an extension to the Meadowhall Park and Ride to provide an additional 213 parking spaces; and a mobility hub at the Meadowhall interchange. The extension to the Park & Ride involves erecting a 'full-decked' structure (with 5.1m height clearance) to provide additional parking over the existing at-grade car park accessed via the existing ramp serving the upper-level car park. This will increase the car park capacity from 328 to 514 parking spaces - an additional 213 spaces. The details of what the mobility hub will include is to be determined at Outline Business Case stage, although it could incorporate amenities such as: cycle stands / lockers, e-scooters, benches and improved travel information.

Active Travel Impacts

The Council's modelling has assessed changes in all day 2-way active travel demand for Sheffield Plan sites through to 2039. The largest generators of active travel trips are:

- a leisure development at the location of the former Sheffield Ski Village at Parkwood Springs (northwest of the city centre);
- a cluster of residential and mixed-use developments inside the St Mary's Gate section of the city centre ring road; and
- office development at Sheffield Olympic Legacy Park in Attercliffe (northeast of the city centre).

Other Active Travel Matters

The Council has seen significant progress of the West Bar project, with it moving from Full Business Case to full approval and the award of £3m to the Council to help deliver the works.

The funding provides £3m towards total project costs of £300m at an intervention rate of 1%. The project is initially to be funded from Sheffield's allocation of the Gainshare delivery-ready capital resource. The project is part of the delivery of Sheffield's second largest city centre regeneration

[12] City Region Sustainable Transport Settlements (gov.uk)

scheme. Whilst the site is in a strategic location, the area has been rundown and largely impenetrable for many years due to large walled off plots and semi-derelict buildings. West Bar will represent a step-change in the quality of public realm in the city, building on the successful Grey to Green investment. West Bar will help provide a suitable environment for inward investors establishing it as a key destination for businesses in the city centre. It will also provide necessary outdoor space to support residential areas and mixed-use neighbourhoods and create an attractive, safe route to and from the city centre. SYMCA investment will support the public realm contributing to ensuring the transformational comprehensive development aspirations for this mixed-use scheme remain viable and sustainable.

The Council and SYMCA has also made significant progress with the Kelham Active Travel and Public Transport project. It represents a major infrastructure scheme, with a total cost £16,055,333 with SYMCA Funding £11,011,515 (through existing Transforming Cities Fund baseline) and £5,043,818 (To be confirmed via SCC Transforming Cities Fund programme flexibility).

The Kelham Active Travel and Public Transport scheme is part of the wider package of measures being delivered via Connecting Sheffield. The Council is seeking to enhance transport connectivity between the areas of Kelham and Neepsend with enhancements to active travel infrastructure (including the creation of a Dutch style Roundabout) and from those areas to the city centre by active travel modes and public transport. Priority for public transport will enhance bus journey times and reliability to and from the city centre and along the corridor in the direction of Hillsborough and beyond. This will deliver:

- Safer, direct and more attractive walking and cycling journeys connecting Sheffield city centre to Kelham and Neepsend; and
- Enhanced attractiveness of bus use through journey time consistency and improved reliability by prioritising buses over general traffic. This corridor forms an important route for buses serving a high passenger demand, both current and potential.

The scheme also plays an important role in supporting the proposals presented in the Housing Zone North development zone which aims to deliver 8,000 new homes over the next 20 years.

Specific outputs for the project are: 0.80km of new cycleway; 0.80km of an active travel route; 14,220 sq.m. of improved public realm; five new crossing points and nine improved crossings; four new cycle parking areas; two new bus gates; and 0.11km of new / improved bus lanes.

The wider Connecting Sheffield programme of major active travel and public transport improvements on key corridors in Sheffield will deliver high quality walking and cycling improvements and additional bus priority

measures. Full details of the programme can be found at https://connectingsheffield.commonplace.is/; and the committed and planned schemes are set out in the Infrastructure Schedule.

3.2 Education

Part 1 of the IDP was informed by forecasts of future education demand within the 2021/22 academic year. Updated forecasts for the 2022/23 academic year are now available, and at a summary level these show increased levels of pupil demand. School place planning officers at Sheffield City Council have indicated that this partly reflects shifts in the underpinning demographics, but also that they are seeing some potential evidence of greater self-containment (i.e. fewer pupils living in Sheffield but travelling to school outside of Sheffield) and lower levels of entry to private education and home education.

At primary level, Part 1 of the IDP indicated that by 2025/26 there would be 5,300 pupils on roll within Sheffield against a capacity for 6,900 pupils when factoring growth from the Sheffield Plan, leaving a surplus of around 1,600 places. Reflecting SCC's updated figures, baseline pupils on roll by 2026/27 (the new end year of what are five-year forecasts) are now estimated to be 5,700 – leaving a smaller surplus of around 1,200 places. It therefore remains the case that, at a citywide level, primary education provision will not be significantly constrained. At a more localised scale, where the capacity position is more affected by individual development sites, it is understood that the same areas as in Part 1 (5 North, 5 South in the shorter term and 6 North in the longer term) may require limited school expansions in the future – subject to monitoring.

At secondary level, Part 1 of the IDP indicated that by 2032/33 there would be 5,700 pupils on roll within Sheffield against a capacity for 6,200 pupils when factoring growth from the Sheffield Plan, leaving a surplus of around 500 places. Reflecting SCC's updated figures, baseline pupils on roll by 2033/34 (the new end year of what are ten-year forecasts) are now estimated to be 5900, making available capacity of around 350 places.

The current level of constraint as a 'bulge' of pupils move through the education system will last longer, and result in sustained capacity constraints going forward. Whilst SCC still anticipates that these will eventually subside, this will not be until the mid-2030s rather than the late/2020s as previously anticipated and set out in the Part 1 IDP. The strategy is for targeted expansions to existing secondary schools in more constrained catchment areas (as already identified in Part 1) are therefore considered more likely to be required, and SCC will need to monitor whether a requirement might eventually arise for a new secondary school within or close to the Central sub-area, subject to forecast and variable factor changes.

3.3 Healthcare

Unfortunately, it has only been possible for the Integrated Care Board to provide limited inputs to Part 2 of the IDP. These have broadly re-confirmed the baseline position established in Part 1, with some additional details. It is understood that the forthcoming Primary Care Estates Plan referred to in Part 1 of the IDP is not yet available.

At this stage the ICB has established the planned growth in Sheffield City Centre and the Central sub-area will significantly exceed available primary care capacity in the locality. Whilst the ICB is already investing in and developing additional capacity to address current baseline pressures, there will remain a need for significant investment to meet the demand associated with anticipated population growth. Based on the ICB's assumed ratio of 1.75 patients per dwelling within the Central sub-area (as set out in Part 1 of the ICB), growth in this area would equate to around 32,000 additional patients.

At this stage the ICB has not specified a preferred approach to accommodating this level of demand. However, based on a typical patient list size for primary care surgeries of around 10,000 patients, it is anticipated that the approach to meeting demand may involve more than one new surgery (for example, it could involve a new surgery and a programme of other expansions). The ICB has indicated that the eventual form of new provision will also need to include accommodation for community healthcare, primary care network services and mental health provision as well as GP provision. Whilst also not indicating a preferred location within the Central sub-area for new healthcare provision, the ICB has indicated that Area 1 (Kelham Island, Neepsend) is not close to existing provision and provision around Areas 3 (the west of the City Centre towards the University) and 5 (the south-west of the City Centre around The Moor) is unlikely to be capable of expansion. These areas may therefore be the most likely preferences for new primary care infrastructure.

The ICB recognises that demand for this new infrastructure will arise incrementally, with a need for suitable land to be reserved for this in one or more development sites. The ICB has also indicated an expectation that this is made available at advantageous terms to ensure to the viable provision of healthcare services. The ICB has requested that developer funding is provided on a per-unit basis to provide for the capital costs of such provision. Given the inability to reflect specific proposals in the IDP at this stage, working with the ICB on the further development of specific proposals will need to be a priority for the ongoing implementation of the Local Plan and future iterations of the IDP.

It has not been possible for the ICB to provide any information on specific future primary care infrastructure schemes outside of the Central sub-area, partly because of the need for the Primary Care Estates Plan to be developed. However, given the forecast future constraint established in Part

1 of the IDP (Table 10) for a number of Primary Care Networks, it is anticipated that schemes will emerge with a similar desire for the delivery of these to be supported by developer funding. At the present time, the ICB has requested that Health Impact Assessments are undertaken to support future planning applications for schemes with 100 or more dwellings, for mixed-use developments on sites of more than 2ha and commercial developments on sites of more than 5ha.

3.4 Green infrastructure

Discussions have taken place with SCC officers responsible for open space and green infrastructure provision since the Part 1 IDP report, but these have not identified significant additional information or specific infrastructure schemes for most types of provision.

One area where there are advancements to the position set out in the Part 1 IDP report is in terms of allotment provision. This identified that demand far outstrips supply, with new provision being needed across the city. Whilst the new strategy for allotment provision (identified as required in the Part 1 report) remains in draft form, officers have identified that demand for allotment remains strong – particularly in the Central, South and South West sub-areas. Particular challenges are anticipated in meeting demand in the Central sub-area given a lack of space and the value of land, with a need for developer funding to help to support new provision. Nevertheless, the need identified by officers is for at least 100 pitches in the Central sub-area – equivalent to a site of around 0.15ha.

3.5 Community facilities

Since the publication of the Part 1 IDP, a number of further discussions have taken place with those within SCC responsible for community facility provision. These have resulted in the following advancements to the position set out in the Part 1 IDP report:

- **Burial and cremation facilities** – Responses to the Regulation 19 consultation on the Sheffield Plan highlighted community views on the importance of burial and cremation facilities. Ongoing discussion with those responsible for these services within SCC have reinforced recognition of the need to establish a new strategy for burial and cremation facility provision within Sheffield, including faith-based provision. Discussions have also highlighted a new requirement to expand the city's public mortuary in response to anticipated increases in demand for the coroner's service.
- **Sports facilities** – Engagement has now been undertaken with the Council's Sports, Leisure & Health team, which had not been possible at the time of the Part 1 report. Discussion focussed on the outcomes of the 2019 Leisure Facilities Investment Review and the

Council's response to it[13], which highlighted some of the challenges facing the city's network of existing facilities in terms of aging facilities and ongoing maintenance costs (identified as around £63 million up to 2028). At the same time the review identified significant opportunities in terms of the renewed recognition of the importance of these facilities following the Covid-19 pandemic, and the ability to help contribute to improving wider health outcomes.

The Council's financial modelling identified that it would be more financially efficient to rebuild some of the city's sports and leisure facilities – with this being the preferred approach for three leisure centres – Springs Leisure Centre in Manor Top, Concord Leisure Centre in Shiregreen and Hillsborough Leisure Centre. It was also identified that Ponds Forge Sports Centre in the City Centre would receive targeted upgrade investment, with the city's other leisure facilities also receiving investment for backlog maintenance.

The total identified capital investment programme was £100m. However, it is now recognised that with ongoing cost inflation, this budget is no longer likely to be sufficient to fund the entire identified programme. At the time of writing, SCC is therefore considering options to progress its investment in sports facilities.

The Council's Sports, Leisure and Health team has indicated that the modelling behind the 2019 review factored future population growth of 6.6%, which allows for the levels of growth to be delivered through the Sheffield Plan. However, the team did indicate that there is a relative lack of sports facility provision in the south east sub-area of the city, in areas such as Beighton and Woodhouse. Growth in population in this area could exacerbate the relative lack of access, although given the potential challenges in funding the existing identified set of improvement schemes across the city it was not identified that a further scheme to address this gap was required.

3.6 Utilities

As set out in Section 2.3, since the publication of the Part 1 IDP further technical work has been undertaken to model the utility demands associated with the levels of growth in the Sheffield Plan.

Electricity heat map analysis

Heat maps have been produced to show the difference between current (2024) electricity demands within Sheffield, and predicted values in 2039 – aligning with the plan period for the Sheffield Plan.

[13] Leisure Services Review Report to Sheffield City Council Executive, November 2021 (sheffield.gov.uk)

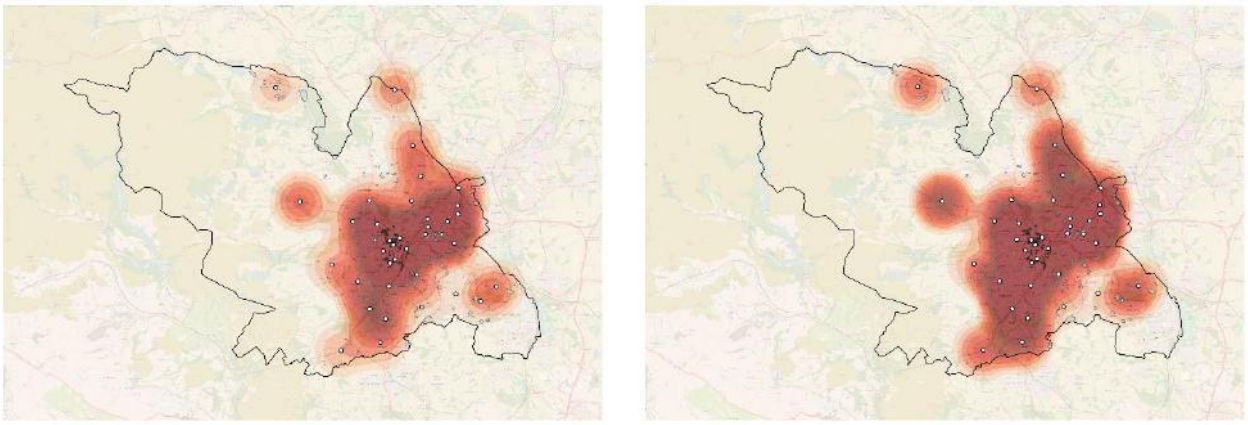
The scenario used is the NPg planning scenario because this is the scenario NPg is actively planning for and working towards to meet net zero requirements.

A transparent to red visual scale is used, so areas of dark red represent areas where there are the highest peak demand, numbers of heat pumps installed or electric vehicles in use. The heatmaps showing the peak demand and density of heat pumps and electric vehicles across Sheffield represent either overall demand experienced by the system or components creating demand, increasing the load on the supply system.

The white dots on the maps show the locations of primary substations supplying the city.

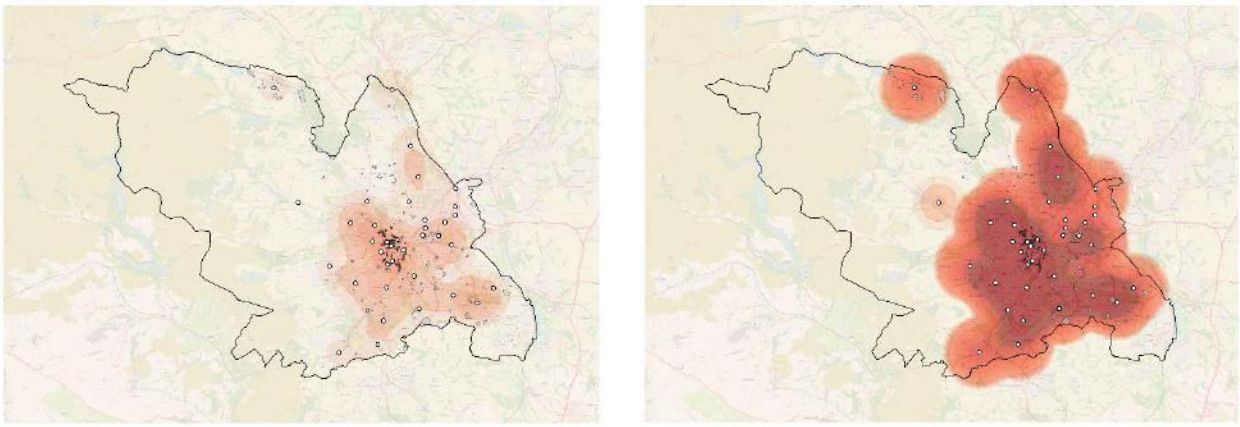
The two heat maps in Figure 10 show the peak demand increasing over the next 15 years across Sheffield, both in magnitude of peak demand experienced and the geographic radius of the demand. Demand is increasing most at the substations in the city centre area. Figures 11 and 12 below demonstrate the extent to which this is expected to be driven by electrical loads from heat pumps and electric vehicle charging, in line with the expected electrification of heat nationally after 2025 and the ongoing shift towards electric vehicle usage.

Figure 10: Heat maps showing changes in overall peak electrical demand between 2024 and 2039



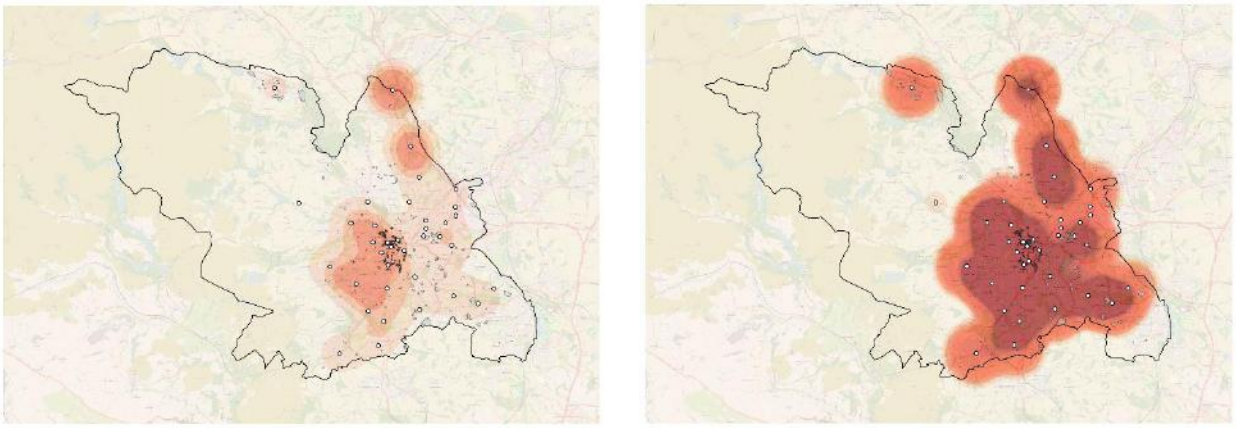
2024 **2039**

Figure 11: Heat maps showing the locations of additional demand from heat pumps between 2024 and 2039



2024 **2039**

Figure 12: Heat maps showing the locations of additional demand from domestic electric vehicle charging between 2024 and 2039



2024 **2039**

Our analysis has placed particular emphasis on the central sub-area, given the Sheffield Plan's approach to concentrating growth in this area. The load growth projected in the NPg planning scenario is relatively well correlated with the development proposed in the plan, i.e. the areas of high demand growth shown in the heat maps above match the locations of the development sites proposed in the plan. This means that NPg is anticipating demand growth in the areas in which developments are being proposed. This section focuses in more detail on the demand growth at the substations within the city centre area, as this is the area containing the most developments and with the most demand growth predicted.

Figures 13, 14 and 15 below show heat maps of peak demand and the components of this associated with heat pumps and electric vehicle charging for a smaller scale, covering the central sub-area.

These are set out in five year intervals between 2024 and 2039 to highlight the growth of demand expected in each category. At this scale it is apparent that whilst additional demand will arise at all substations serving the central sub-area, some substations not located close to growth locations will also experience significant increases in demand. This reflects that the take-up of heat pumps and electric vehicle charging will evidently not only take place in newly-built homes but will apply across the city's existing building stock as well.

Indeed, developments in the central sub-area are anticipated to be higher density – meaning that a single heat pump is likely to be able to supply multiple dwellings rather than just one. In the central sub-area, it will also be possible for new development to be served by the Sheffield Heat Network. By contrast, other parts of the city are likely to have a heat pump to dwelling ratio closer to 1:1.

Figure 13: Heat maps showing changes in overall peak electrical demand at substations in the central sub-area between 2024 and 2039

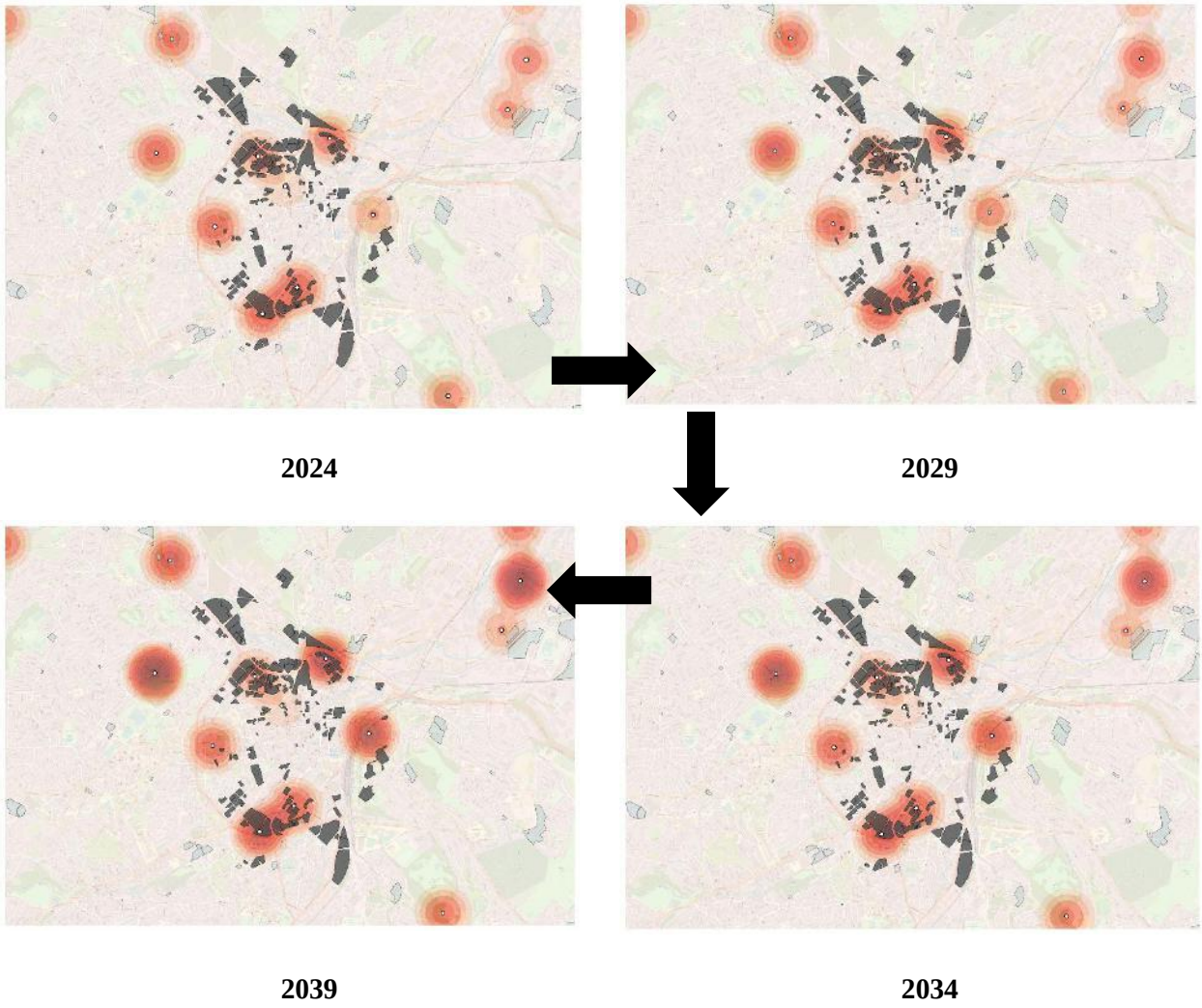


Figure 14: Heat maps showing changes in demand from heat pumps at substations in the central sub-area between 2024 and 2039

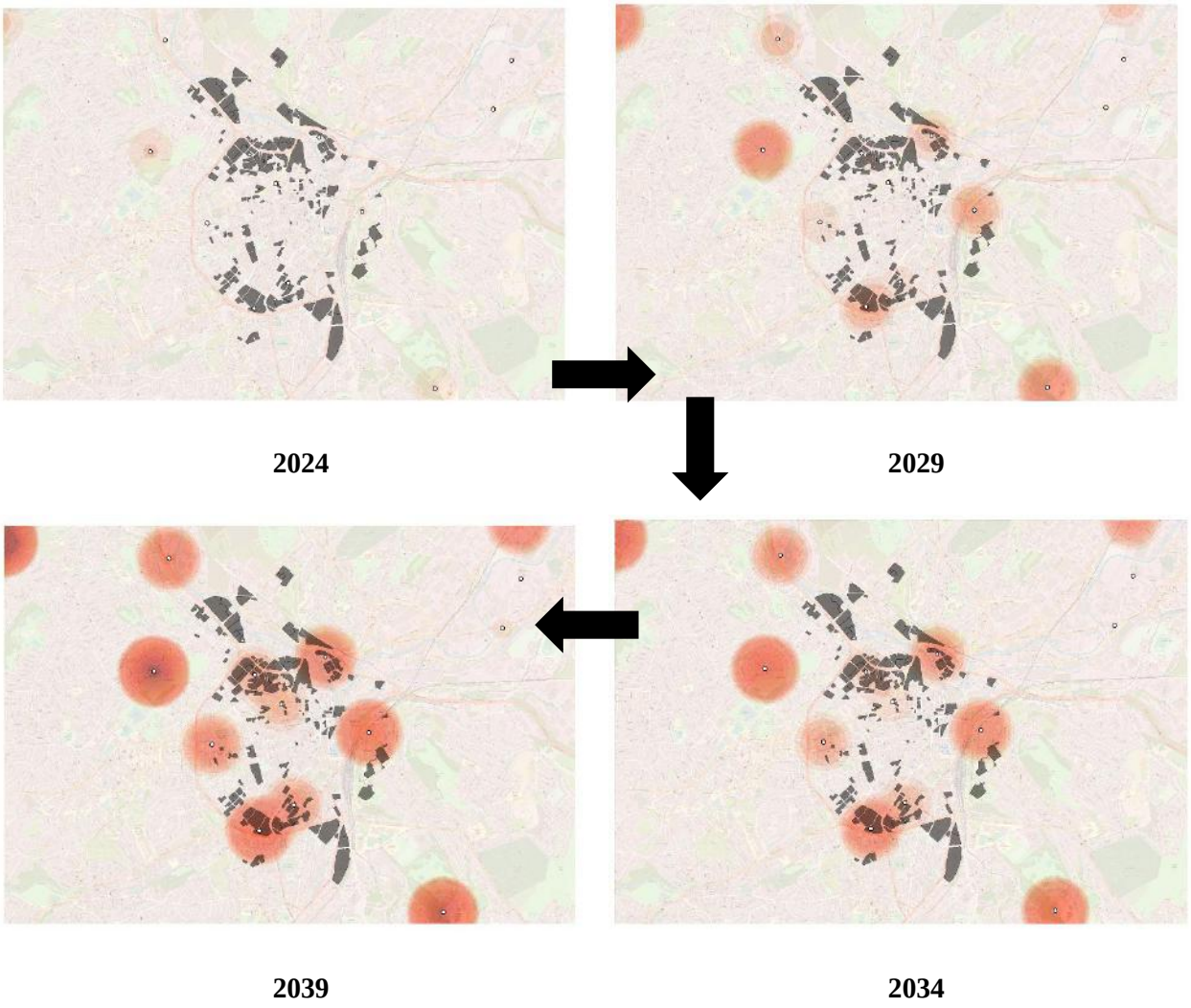
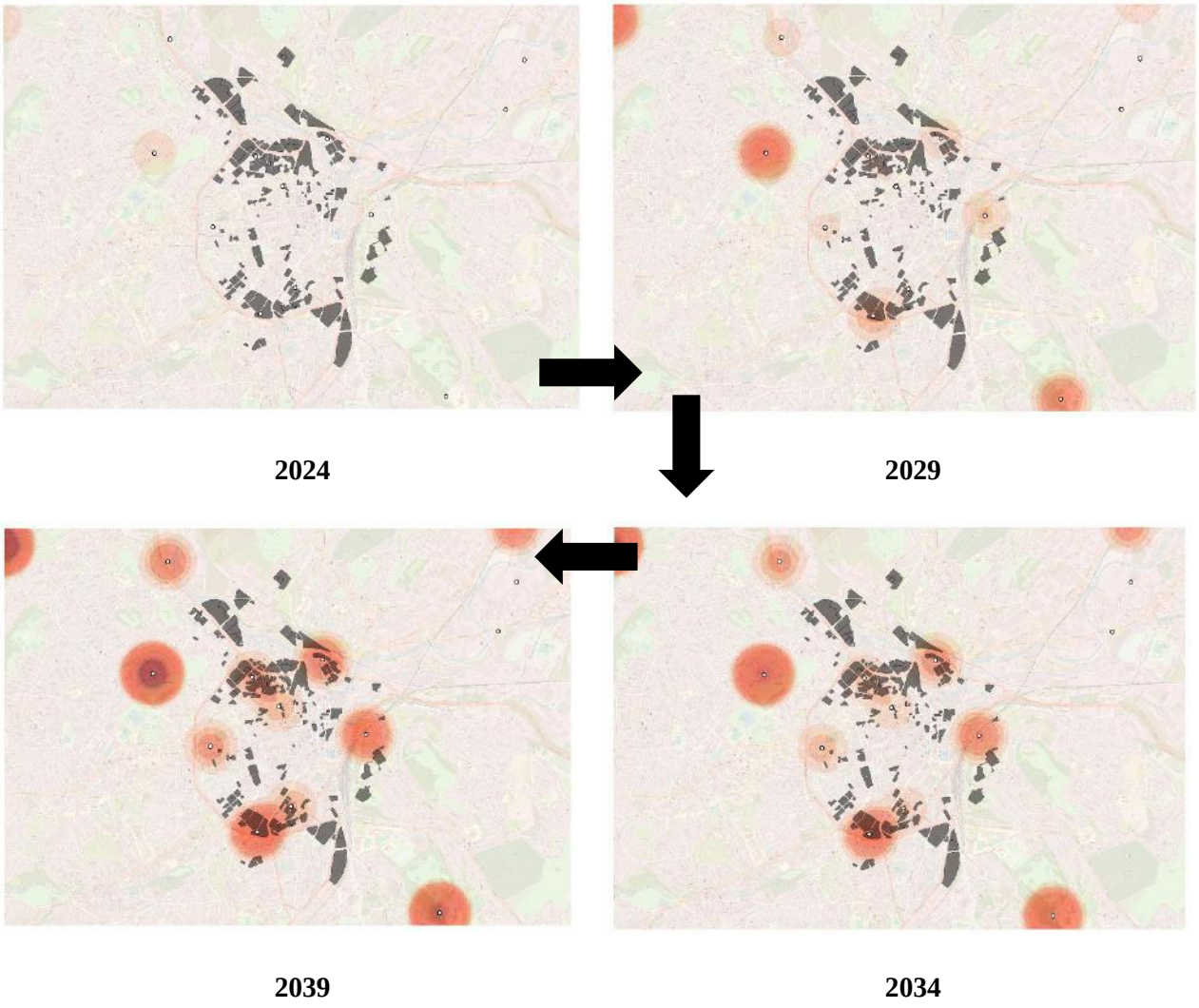


Figure 15: Heat maps showing changes in demand from electric vehicle charging at substations in the central sub-area between 2024 and 2039



Interaction with electrical capacity

As well as demand projections, NPg also provide publicly available data on the current headroom of primary substations as well as the predicted headroom by 2050, based on the future energy scenarios described previously. This information highlights any substation that is likely to reach maximum capacity if the predicted increase in demand occurs.

Focusing on the three scenarios considered previously – the NPg planning scenario, 'Lead the way' and 'Fall short' – all will require some substation upgrades to meet increased future requirements. The year in which substation upgrades are required will depend upon the scenario, as summarised below.

Table 3: Substations in Sheffield expected to reach capacity based on future demand scenarios, and the year in which capacity is expected to be reached

Year	Future energy scenarios		
	NPg planning scenario	Lead the way	Fall short
2031	Mansfield Road	Mansfield Road	-
2035	Marmion Road Tankersley Park Wheatacre Road	Marmion Road Tankersley Park Wheatacre Road Crookesmoor Road	Mansfield Road
2040	Crookesmoor Road Hackenthorpe Stannington Road Blackburn Meadows Darnall Ecclesfield	Hackenthorpe Stannington Road	Marmion Road Tankersley Park Wheatacre Road Crookesmoor Road Hackenthorpe
2045	Gleadless Valley Greenhill Norfolk Park Snaithing Park Road	-	Stannington Road Blackburn Meadows Darnall Ecclesfield
2050	-	-	Gleadless Valley Greenhill Norfolk Park Snaithing Park Road

At least seven substations are expected to require upgrade before 2050 in order to meet demand requirements, regardless of which scenario occurs. NPg's planning scenario and the 'fall short' scenario would both result in the need for upgrades to 14 substations, with these being slightly more front-loaded in the NPg scenario given the greater speed at which decarbonisation measures are assumed to occur. However, it is noted that none of these would be short term measures with the first upgrade being Mansfield Road in 2031. Additionally, only a maximum of five substation upgrades are forecast to fall within the plan period of the Sheffield Plan.

Regulation changes for the planning of electricity infrastructure upgrades

Since the publication of Part 1 of the IDP, Ofgem has completed a review of the charges associated with connecting to electricity distribution networks, constituting of a review of the connection charging boundary and a review of the definitions and choices of access rights that the user of the network has[14]. Following the review, Ofgem published their decision in which they concluded that charging arrangements for distribution network connected customers no longer provide an effective signal for network users on how and when to connect to the network. They also concluded that,

[14] Access and Forward-Looking Charges Significant Code Review (ofgem.gov.uk)

without changes, this could slow down the roll out of low carbon technologies (LCTs) across the energy system. This includes electric vehicle charging points as these are important demand connections that will need to be rolled out at scale to meet emissions targets.

A high-level summary of Ofgem's decision is the following:

- Connecting customers (developers) will no longer have to directly contribute for wider network reinforcement when making demand connections.
- Generation customers will have a reduced contribution to wider network reinforcement.

Currently, demand customers must pay 'shallow-ish' connection charges which include any extension assets and a proportion of reinforcement at their voltage level as well as a proportion of reinforcement above their voltage level. This means if their connection results in requirement of a new substation, they are financially responsible for this despite being only one of a number of developers who have contributed to the need for the reinforcement.

The new arrangements mean that new demand connection customers will only pay for any extensions required to the network but not any reinforcement charges; if their connection results in the need for a new substation/transformer, they will not be financially responsible for that. This improves the financial outlook for developments considering electrified heating to be unfeasible because of potential network constraints.

Figure 16: Changes to the arrangements for funding electricity network reinforcements

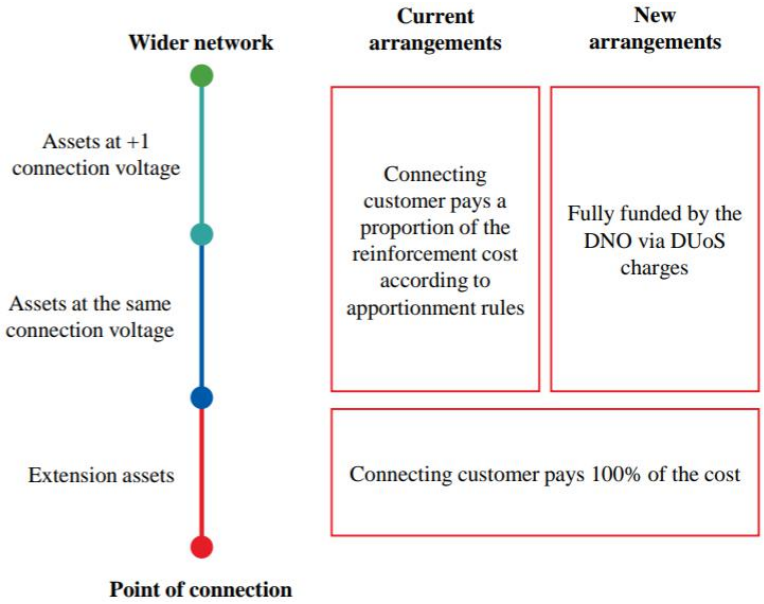


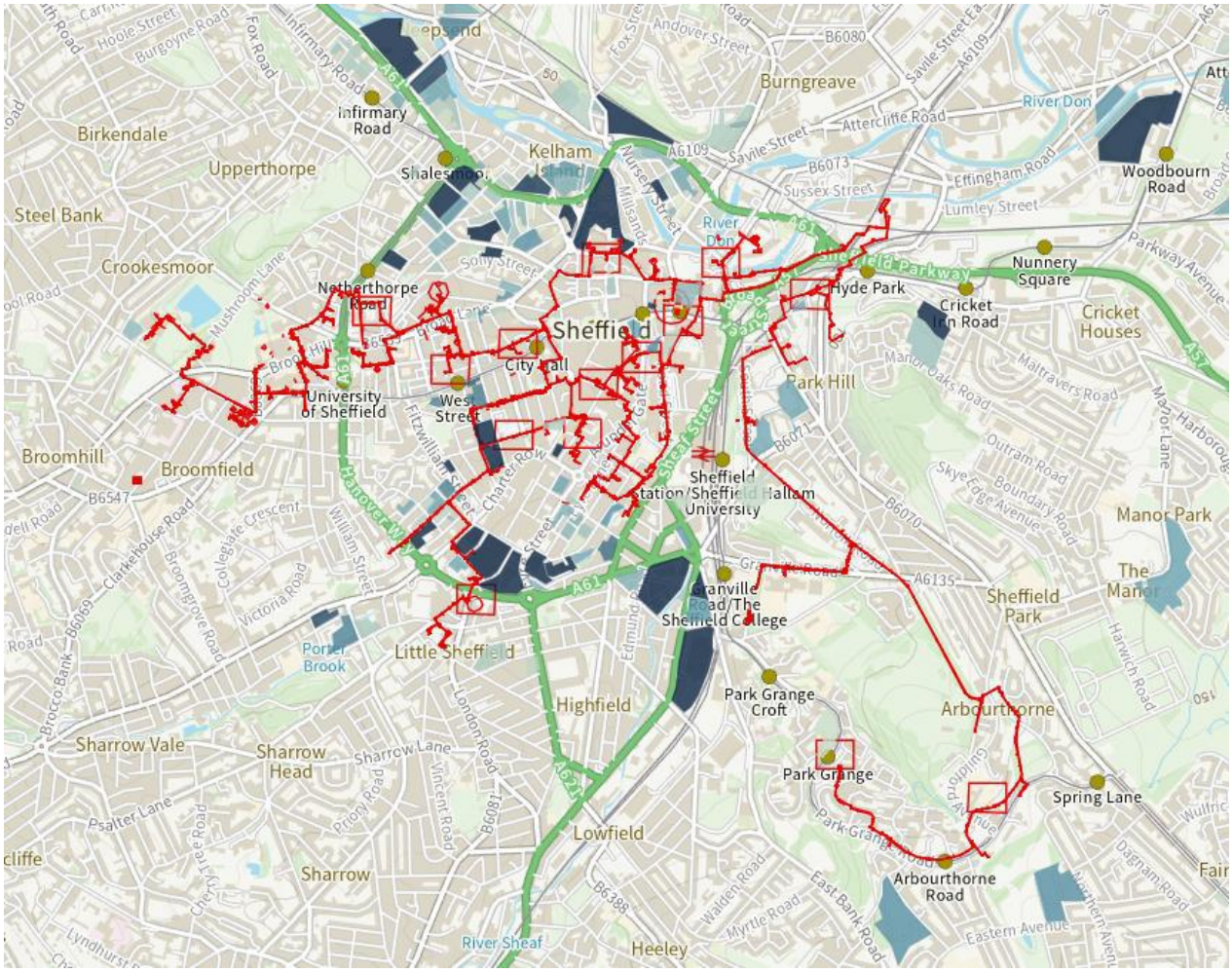
Figure 16 shows the difference between the old system and the new system as decided by Ofgem. Ofgem's reforms are intended to reduce the upfront cost of connection for demand customers but they have also implemented the high cost cap (HCC) for demand customers to protect Distribution

Use of System (DUoS) bill payers from excessive connection costs. The demand HCC is a £/kVa limit, above which the connecting customer will be required to pay 100% of the cost of reinforcement, where they exceed the cap. Reinforcement below the cap would be paid according to the new connection boundary agreements and be funded by DUoS charges. The HCC is set at £1720/kVA and is based on analysis of DNOs' data, detailing the reinforcement costs arising from specific demand connections. The demand HCC is likely to only impact a very small number of connection customers, with Ofgem's analysis estimating that, at the suggest level, there will be no DNO region in which more than 5% of connection offers are affected. This will protect businesses paying for their electricity from paying too much in the new developments.

Sheffield heat network

Veolia has performed an assessment for connecting the proposed new developments in the city centre area, where the current heat network is located, as seen in Figure 17 below.

Figure 17 Desktop study for heat network connections performed by Veolia



From their desktop study the developments that could connect to the heat network have been identified, as presented in the table below. The desktop study has also indicated whether there are any upgrade works that would be required to facilitate these connections.

Table 4 – Identified Local Plan sites considered able by Veolia to connect to the heat network

Site Ref	Address	Max Heat Demand (kW)	Distance to the Network (m)	Connection Point	Existing Network Upgrades Needed (if connected on its own)
HC07	Buildings at Wellington Street and Trafalgar Street, S1 4ED	4305	100	DN250 spine on Trafalgar Street	No
HC03	Land and buildings at St Mary's Gate and Eyre Street, S1 4QZ	3521	322	DN150 spine on Moore Street	No
HC09	Milton Street Car Park Milton Street Sheffield S3 7UF	1435	35	DN100 spine on Milton Street	No
HC10	Kangaroo Works - Land at Wellington Street and Rockingham Street	1274	25	DN250 spine on Trafalgar Street	No
HC11	Wickes, Young Street, S3 7UW	1274	110	DN150 spine on Moore Street	No
SV06	Klausners Site, Sylvester Street / Mary Street	1172.5	470	DN150 on Brown Street	Yes, a DN150 (900m) loop needs to be installed between Brown St and Fitzwilliam Gate. Wickes and St Mary would benefit from this loop as well
SV04	Decathlon, Eyre Street, S1 3HU	1060.5	490	DN150 on Brown Street	
HC12	Midcity House 17, 23 Furnival Gate, 127-155 Pinstone Street And 44 Union Street Sheffield S1 4QR	1043	15	DH main spine on Union Street	Yes, 60m of DN65 on Union St. needs to be upgraded to DN125
HC13	999 Parcel Ltd, 83 Fitzwilliam Street, Sheffield S1 4JP	745.5	165	DN150 spine on Milton Street	No
CW11	51-57 High Street And Second Floor Of 59-73 High Street	721	82	DN100 spine on KingStreet	No
HC14	DWP Rockingham House 123 West Street City Centre Sheffield S1 4ER	567	75	DN250 spine on Rockingham St	No, assuming Rockingham Street loop installed (220m DN250)

Site Ref	Address	Max Heat Demand (kW)	Distance to the Network (m)	Connection Point	Existing Network Upgrades Needed (if connected on its own)
SV07	Buildings at Shoreham Street and Mary Street, S1 4SQ	521.5	210	DN150 on Brown Street	No
HC15	Land and Buildings at Fitzwilliam Street, Egerton Street and Thomas Street, S1 4JR	476	160	DN150 spine on Milton Street	No
HC17	Car Park, Eldon Street, S3 7SF	472.5	160	DN250 spine on Trafalgar Street	No
HC16	Flocton House and Flocton Court, Rockingham Street, S1 4GH	472.5	75	DN250 spine on Rockingham St	No, assuming Rockingham Street loop installed (220m DN250)
SV08	Mecca Bingo, Flat Street, S1 2BA	423.5	70	DN400 spine between Arundel Gate & Flat St	No
SV09	3-7 Sidney Street and land adjacent, S1 4RG	409.5	95	DN150 on Brown Street	No
LR01	B & Q Warehouse, Queens Road, S2 3PS	1631	800	DN150 on Paternoster Row	No Noted that all three sites would likely need to be connected for it to be viable
LR03	Land at Queens Road and Farm Road, S2 4DR	1176	530		
LR04	Grovesnor Casino, Duchess Road, S2 4DR	388.5	620		
HC18	50 High Street City Centre Sheffield S1 1QH	353.5	145	DN400 spine between Arundel Gate & Flat St	No
SV12	Stepney Street Car Park Stepney Street Sheffield S2 5TD	350	67	DN250 on Broad Street	No, subject to some localised linkages
HC04	NCP Furnival Gate Car Park, Matilda Street, S1 4QY	350	105	DN100 spine on Union Street	Yes, 60m of DN65 on Union St. needs to be upgraded to DN125

Additionally, the assessment has been carried out by assuming the developments connecting to the network individually (as reported in the table above), as well as considering the cumulative impact on the heat network when multiple developments all chose to connect. The cumulative impact can be generally represented by the need of upgrading upstream networks.

In summary, the Energy from Waste plant has a heat generation capacity of 60 MW and the current peak capacity of the heat network is approximately 35 MW. The connections presented in the above

table would have a total maximum heat demand of approximately 26 MW. This means that if there were not any new bulk heat generation, the heat network would reach its maximum capacity with the connections of the above listed developments.

Water supply

At the time of publishing the Part 1 IDP, it had not been possible to hold discussions with Yorkshire Water (YW) or Severn Trent Water (STW) to discuss infrastructure needs relating to water supply in the respective areas of the city that each serves.

Discussions have now taken place with STW. These indicated that for the majority of new developments, particularly those within urban areas such as Sheffield, there are not anticipated to be any issues connecting to new development or providing sufficient water supply capacity. Details of specific sites included in the Sheffield Plan were shared with STW, and no specific concerns relating to any of these sites have been identified.

YW has been unable to provide a specific response relating to water supply (the meeting that took place was specific to sewerage – see below), however it has indicated that its Water Resources Management Plan 2024[15] provides a general overview. This identifies challenges to future potable water availability including climate change, and the potential for disruption to water supply transfers between coverage areas (particularly that of STW). Planned measures to increase water supply include the introduction of new boreholes, increased river abstraction and a potential new water supply transfer with Northumbrian Water. However, demand management is identified as equally important – such as the introduction of efficiency measures and greater rollout of smart metering, and leakage reduction.

Given the comments made by STW, and given that Sheffield is also not noted as an area of water stress, it is considered relatively unlikely that significant concerns around water supply in the city will arise. However, further exploration of this should continue to be a priority as the Sheffield Plan moves into an implementation stage.

Sewerage

Shortly after the publication of the Part 1 IDP a meeting was held with STW to discuss infrastructure needs relating to sewerage in Sheffield. This did not identify any fundamental concerns but did highlight that the combined sewer system within the central sub-area will potentially become a constraint in the future. The future response to this will be to reaccommodate

[15] Yorkshire Water - Water Resources Management Plan (yorkshirewater.com)

surface water drainage flows out of the combined sewer system, into a separate new system. This would reduce the load on wastewater treatment plants, conserve energy and reduce carbon emissions – and by more effectively managing and reusing surface water, it will be possible to reduce demand for potable water. In turn, such changes will also provide more capacity for sewerage flows associated with new development. YW identified the benefits of the phasing of development throughout the plan period, which would allow YW more time to plan and install any required new sewerage infrastructure.

However, whilst attempts have been made to share further details of the Sheffield Plan's growth locations and to understand what specific sewerage enhancement schemes might be required, no response has been received. From the discussions that were previously able to take place it is not understood that sewerage capacity presents a significant short term constraint to growth – but as with water supply, further exploration of this should continue to be a priority as the Sheffield Plan moves into its implementation stage.

4. Summary of inclusions in the Infrastructure Schedule

4.1 Transport

Strategic Road Network - Conclusions and Mitigation Measures

The initial modelling identifies two junctions on the SRN where the level of impact generated by the proposals in the Sheffield Plan are likely to require mitigation measures.

The junction and its preliminary proposed mitigation measures are set out in the table below. A more detailed list of the mitigation measures, including their expected cost and timescale for delivery is set out in the Infrastructure Schedule.

Table 5: Strategic Road Network Mitigation Measures

Junction	Indicative Mitigation Measure
A616 / A61	Additional lane for dedicated right-turn
A616 / A629	Conversion of junction, signalisation, and ghost-island

The preliminary proposed mitigation measures include the provision of additional lanes, dedicated turns, junction conversions to facilitate more efficient operation, and signalisation. These initial mitigation measures continue to be discussed between SCC and National Highways, so that agreement can be reached on the optimal solution. Once confirmed, the infrastructure requirements will progress to design stage. A more detailed list of the mitigation measures, including their expected cost and timescale for delivery is set out in the Infrastructure Schedule in Annex A.

Elsewhere, the assessment has shown that there are minimal severe impacts in terms of the motorway merge / diverge areas. Overall, based on the work to date, there are no highway capacity issues on the SRN caused by the trips generated by the Sheffield Plan which cannot be successfully mitigated. However, further work will be required as the Sheffield Plan moves towards implementation to confirm this position.

Specific next steps include:

- Reviewing merge / diverge analysis in line with flows agreed with NH;
- Reviewing junction analysis in line with flows agreed with NH;
- Discussing results of detailed SRN capacity analyses with NH and confirm findings;
- Refinement of mitigation measures for any further identified issues on the SRN;

- Discussing and confirming mitigation proposals with NH;
- Undertaking high level costing of mitigation proposals

Local Road Network - Conclusions and Mitigation Measures

The initial modelling identifies seven junctions on the LRN where the level of impact generated by the proposals in the Sheffield Plan indicates that mitigation measures are required.

The junction location and its preliminary proposed mitigation measures are set out in the table below. A more detailed list of the potential mitigation measures, including their estimated cost and timescale for delivery is set out in the Infrastructure Schedule.

Table 6: Local Road Network Mitigation Measures

Sheffield Plan Sub-Area	Junction	Indicative Mitigation Measure
South	A6135 City Road / Wulfric Road	Introduction of signalisation.
South	Station Road / New Street	Junction upgrade including introduction of signalisation.
South	Birley Moor / Occupation Lane	Junction upgrade including introduction of signalisation.
South	A57 Mosborough Parkway / Coisley Hill	Junction upgrade including introduction of signalisation.
Northwest	Langsett Road North / Church Street	Junction upgrade including introduction of signalisation.
Northwest	Orchard Street / Station Lane	
Northeast	B6070 Rutland Road / Boyland Street	Junction upgrade including introduction of signalisation.

Initial proposals for mitigation include additional turns, introduction of signalisation, and road widening. These initial mitigation measures are being discussed with SYMCA and local stakeholders. There is a need to ensure that mitigation measures integrate with the existing operation and the tram network, and wider proposals to deliver Mass Transit Corridors as part of the Sheffield Plan strategy for sustainable transport. Once confirmed, the infrastructure requirements will progress to design stage. A more detailed list of the mitigation measures, including their expected cost and timescale for delivery is set out in the Infrastructure Schedule in Annex A.

Sustainable Transport & Active Travel – Conclusions and Mitigation Measures

Mitigation measures for sustainable transport and active travel have been devised taking account of demand flows, as well as 'best-practice' transport planning principles, to encourage uptake of public transport/active and to complement both Sheffield's current transport network and planned improvements. Mitigation schemes are tailored to larger development sites and notable clusters of smaller sites.

In total, 151 different mitigation measures have been proposed, through a combination of new active travel links (footways and cycleways) following likely pedestrian and cyclist desire lines; improvements to bus stops (e.g. provision of upgraded shelters, Real Time Passenger Information); improving the quality of existing active travel links/wayfinding; installing and upgrading of crossings in the vicinity of Sheffield Plan sites to aid active travel and calm traffic; changes to bus services (frequency and/or routeing) to better serve Sheffield Plan sites; and improving pedestrian access (e.g. crossings/footway improvements) to bus stops closest to Sheffield Plan sites.

The mitigation measures, by type, are summarised in Table 7 below. A more detailed list of the proposed mitigation measures can be found in the Infrastructure Schedule.

Table 7: Public Transport and Active Travel Mitigation Measures

Mitigation Type	No. of Interventions Proposed
New active travel links (footways and cycleways) following likely pedestrian and cyclist desire lines.	54
Improvements to bus stops (e.g. provision of upgraded shelters, Real Time Passenger Information).	47
Assessing the quality of existing active travel links/wayfinding, with improvements where necessary.	18
Installation and upgrading of crossings in the vicinity of SLP sites to aid active travel and calm traffic.	12
Changes to bus services (frequency and/or routeing) to better serve Sheffield Plan sites.	11
Improving pedestrian access (e.g. crossings/footway improvements) to bus stops closest to Sheffield Plan sites.	9

Next Steps

As noted throughout the transport section, and in particular the Highways section, there is further work still to be done to finalise the assessment of impacts on the transport network and to define and agree the infrastructure needed to mitigate any significant impacts identified.

For highways, and in particular the SRN, this means refining the modelled outputs in conjunction with NH and LPAs. This will involve a comparison of the Council's modelling work, with that held by NH and to see where, if at all, there are any differences and what that may mean for mitigation

requirements. The Council and NH have a long-standing and effective working relationship, and all parties are proactively working towards a consensus view, including undertaking collaborative workshops, data-exchanges, and use of shared resources (where necessary). All parties expect that the modelling will be refined and completed, and that mitigation measures will be confirmed as part of the next and final stages of work during summer/autumn 2023.

For highways, and the LRN, this means refining the strategic modelling outputs and fully incorporating the outputs from the more detailed Aimsun modelling of the City Centre and the Lower Don Valley to create a complete picture of the network. The Council will continue to liaise with its consultants and stakeholders to ensure that the data is validated, and any mitigation measures are refined to ensure they are effective and deliverable.

For sustainable transport / public transport and active travel, the next stages will also consist of proactive engagement and dialogue with key stakeholders, such as DfT, SYMCA, Network Rail, Northern, and other LPAs. The impacts and mitigation measures defined so far, allows the Council and partners to better engage and influence funding regimes for sustainable transport projects and to be more agile in responding to future funding rounds. Equally, it allows the Council and partners to better shape conversations with Government (and other funding and delivery partners) to highlight the challenges and opportunities in Sheffield and the wider sub-region.

4.2 Education

Part 1 of the IDP and the updates in Chapter 3 of this report have established that:

- Primary education provision within Sheffield is not significantly overstretched in baseline terms, as a result of capacity enhancements that were made to primary schools during the last decade to accommodate a wave of pupil population growth. However, there will be some challenges in specific locations related to growth which will need to be monitored to establish whether future investment schemes are required. A small number of existing targeted capacity enhancement schemes also already exist.

- Secondary education provision within Sheffield is somewhat constrained, with targeted capacity enhancements being necessary in a number of locations to respond to needs arising from growth and SCC will need to monitor whether a requirement might eventually arise for a new secondary school within or close to the Central sub-area, subject to forecast and variable factor changes.

- Broader capacity enhancements are likely to be required for special educational needs provision, including a scheme subject to a funding bid. Sheffield has growing demand for

specialist educational provision. Since 2018, special school places have increased by approximately 30%, these trends are forecast to continue. Demand for EHCPs has significantly increased since 2020, with the rate of new plans doubling in some year groups.

- Based on the position at the current time, no specific local authority-led schemes are required for early years provision, although potential impact of the 2023 Childcare reforms is currently being reviewed.

In addition to the schemes identified in the Infrastructure Schedule, the following are recommended as issues for the Council to continue to monitor and address throughout the delivery and implementation of the Sheffield Plan:

- Ongoing monitoring to establish whether targeted primary school expansions are required as a result of growth in the Sheffield Plan, particularly in Planning Areas 5 North (East Sheffield), 5 South (East Sheffield) in the shorter term and 6 North (South East Sheffield) in the longer term.

- Ongoing monitoring to establish whether further secondary school expansions are required beyond those set out in the infrastructure schedule, specifically whether a requirement might eventually arise for a new secondary school within or close to the Central sub-area, subject to forecast and variable factor changes. Given the land requirements for such a school, it is anticipated that any such scheme would need to be subject to a site search process and potentially be delivered through a future review of the Sheffield Plan.

4.3 Healthcare

Part 1 of the IDP and the updates in Chapter 3 of this report have established that:

- Primary healthcare provision within Sheffield is constrained, in common with most other localities nationally. The ICB's preferred model of future provision is consolidation into a smaller number of larger surgeries, again reflecting national trends.

- Given the constraints within a number of PCNs, planned growth will require a variety of surgery premises improvements, particularly in the Central sub-area where entirely new surgery premises will be required to address the significant concentration of growth in that location. The ICB's forthcoming primary care estates strategy for Sheffield should allow the nature of planned improvements to be understood in greater detail.

- Emergency services provision has been consolidated into a smaller number of physical locations in recent years. Whilst it was not possible to discuss current capacity and future

growth requirements with infrastructure providers, based on our experience from IDPs elsewhere it is not anticipated that there will be significant implications for the Sheffield Plan.

In addition to the schemes identified in the Infrastructure Schedule, the following are recommended as issues for the Council to continue to monitor and address throughout the delivery and implementation of the Sheffield Plan:

- Work with the ICB to develop a more specific scheme (or series of schemes) to meet the forecast future demand increase of around 32,000 patients in the Central sub-area, including the identification of which development site (or sites) new surgery premises will need to be located within.
- In conjunction with the emergence of the ICB's Primary Care Estates Strategy, work with the ICB to identify specific schemes to increase primary care capacity elsewhere in the city.

4.4 Green infrastructure

Part 1 of the IDP and the updates in Chapter 3 of this report have established that:

- Sheffield is generally well-served by its green infrastructure. However, in order to maintain its proud status as the Outdoor City, new and enhanced green infrastructure needs must be clearly identified and incorporated into development schemes at an early stage. Those listed in the Sheffield Plan's site allocation policies are explicitly identified in the Infrastructure Schedule.
- Limited land availability for provision of new open spaces creates a challenge for the growth strategy in the central sub-area, requiring new development to support the enhancement of existing green infrastructure and public realm assets, whilst maximising accessibility to new provision elsewhere in the city. The Grey to Green approach is being rolled out across the City Centre towards Kelham Island, a network of open spaces is now needed to support this approach.
- Development of a new citywide strategy for allotments is required to support delivery of identified needs. Allotment demand outstrips supply, with new sites needed in areas of high demand, and again particularly in the Central sub-area.
- Demand for provision for all sports is anticipated to grow in line with the population over the lifetime of the plan, whilst there are existing identified deficits for mini 5-aside and youth 11-aside football pitches.

In addition to the schemes identified in the Infrastructure Schedule, the following are recommended as issues for the Council to continue to monitor and address throughout the delivery and implementation of the Sheffield Plan:

- Develop a wider set of open space interventions beyond those associated with the delivery of sites allocated in the Sheffield Plan, targeted at meeting deficits identified in the Open Space Assessment and responding to other developing plans and initiatives such as the South Yorkshire Local Nature Recovery Strategy.
- Continued development of the Council's new allotment strategy, including identifying specific needs beyond those already confirmed for the Central sub-area and developing and delivering schemes to meet the needs reported by officers.
- Development of a delivery strategy and more specific details of schemes and locations to meet identified needs and deliver the interventions identified in the Infrastructure Schedule for new and improved sports pitches.

4.5 Community facilities

Part 1 of the IDP and the updates in Chapter 3 of this report have established that:

- Sheffield currently has a wide range of community facilities. Because new development within the city will largely be on brownfield sites in close proximity to existing communities, it is not anticipated that any significant provision of entirely new community facilities will be required as a result of proposals in the Sheffield Plan. However, some targeted new provision may be required as the City Centre transforms to have more residential uses within it, and investment may still be required in facilities such as community centres elsewhere in the city to address any issues with the quality of provision.
- A comprehensive programme of investment priorities have been identified to address long-standing deferred maintenance of the city's leisure centres, including the rebuilding of several leisure centres. However, given cost inflation there remain some uncertainties around how these will be delivered.
- Some premises improvements are likely to be required for the city's library provision, including addressing long-term questions around the ongoing role of the city's Central Library.
- It is expected that pressure on burial space will increase over the lifetime of the plan, with identified immediate needs for specific provision for the Muslim community. Development

of a new citywide strategy for burial space is required to fully understand future needs and support delivery of new facilities in the right locations.

In addition to the schemes identified in the Infrastructure Schedule, the following are recommended as issues for the Council to continue to monitor and address throughout the delivery and implementation of the Sheffield Plan:

- Establishment of an evidence base around the adequacy and quality of existing community centres around the city (given that these are owned and operated by a wide range of third-party organisations and charities), as the basis for potential investment of developer contributions.
- Confirmation of an updated approach to leisure facilities investment, reflecting ongoing cost inflation.
- Establishment of the most effective form of investment in the future of the city's Central Library. This could potentially be utilised as a solution to the need to ensure accessible day-to-day community facility space within the Central sub-area.
- Development and delivery of a strategy for increased burial space, crematoria provision and mortuary/coroner provision is required in the relatively short term, to quantify needs and ensure that these can effectively be met.

4.6 Utilities and digital

Part 1 of the IDP and the updates in Chapter 3 have established that:

- There are likely to be significant future constraints in the city's electricity supply network that will require enhancements to a number of substations across the city. However, these are not solely necessary as a result of development in the Sheffield Plan and reflect wider shifts to decarbonise, such as the take-up of electric vehicles and heat pumps. Recent Government policy changes also mean that the costs of these works will now be 'socialised' amongst all developers making new connection requests, meaning that potentially disproportionate connection charges previously anticipated will no longer have adverse impacts on the viability of development.
- Given the significant amount of proposed development in the Central sub-area and the likely constraints on the electricity supply network, it is recommended that the Council seeks to ensure that new development is connected to the District Energy Network (and enhances the

network to allow this, where required). A number of sites have been identified with potential to connect to the network.

- Based on the limited engagement that it has been possible to undertake, there are not anticipated to be any significant adverse implications for water supply infrastructure as a result of development proposed in the Sheffield Plan.
- Early-stage discussions with Yorkshire Water in between the phases of work on Part 1 and Part 2 of the IDP have identified a likely need for significant investment in the sewerage network in Sheffield to separate surface water and foul flows and create additional capacity. However, it has not yet been possible for Yorkshire Water to identify a specific scheme to address this or any other sewerage schemes elsewhere in the city.
- The latest Level 2 Flood Risk Assessment modelling for Sheffield was being undertaken at the same time as Part 2 of the IDP, meaning that flood risk management infrastructure schemes remain to be identified.

In addition to the schemes identified in the Infrastructure Schedule, the following are recommended as issues for the Council to continue to monitor and address throughout the delivery and implementation of the Sheffield Plan:

- Ongoing discussions with Yorkshire Water to identify the most effective response to identified likely capacity constraints in the city's sewerage network, including the development of a specific scheme for the central sub-area and identification of any necessary schemes elsewhere in the city.
- Reflection of flood risk management infrastructure schemes emerging from ongoing flood risk modelling in the implementation of the Sheffield Plan, including as individual sites begin to come forward.

Annex 1 – Infrastructure Schedule

Scheme Reference	Infrastructure type	Scheme description	Scheme location	Delivery body	Funding method	Delivery phasing	Prioritisation	Source of scheme
TR01	Transport - Strategic Road Network	Initial modelling through use of SCRTM1 and AIMSUN indicates that there are a minimum of two junctions on the SRN where direct mitigation is required - the A616 junctions with the A61 and A629. The modelling work continues to be refined and finalised, and there may be further junctions on the SRN that require mitigation measures. Initial proposals for mitigation include: the provision of additional lanes, dedicated turns, junction conversions to facilitate more efficient operation, and signalisation. These initial mitigation measures are being discussed with National Highways, so that agreement can be reached as to the optimal solution. Once confirmed, the infrastructure requirements will progress to design stage.	Chapeltown/High Green Sub-Area Barnsley	National Highways	S.106 / CIL, National Highways, SCC Captial Programme	2024 - 2029	Fundamental	SCC modelling work, in collaboration with National Highways
TR02	Transport - Local Road Network	Initial modelling through use of SCRTM1 and AIMSUN indicates that there are a minimum of four junctions on the LRN where direct mitigation is required. The modelling work continues to be refined and finalised, and there may be further junctions on the LRN that require mitigation measures. Initial proposals for mitigation include: additional turns, introduction of signalisation, and road widening. These initial mitigation measures are being discussed with SYMCA and local stakeholders. In particular, there is a need to ensure that mitigation measures integrate with the existing operation and the tram network, and wider proposals to deliver Mass Transit Corridors as part of the Sheffield Plan strategy for sustainable transport. Once confirmed, the infrastructure requirements will progress to design stage.	South Sub-Area	SCC / SYMCA	S.106 / CIL, SCC Captial Programme, SYMCA Capital Programme, CRSTS 1, CRSTS2	2024 - 2029	Fundamental	SCC modelling work, in collaboration with SYMCA and other relevant LPAs
TR03	Transport - Local Road Network	Initial modelling through use of SCRTM1 and AIMSUN indicates that there are a minimum of two junctions on the LRN where direct mitigation is required. The modelling work continues to be refined and finalised, and there may be further junctions on the LRN that require mitigation measures. Initial proposals for mitigation include: introduction of signalisation and road widening. These initial mitigation measures are being discussed with SYMCA and local stakeholders. In particular, there is a need to ensure that mitigation measures integrate with the existing operation and the tram network, and wider proposals to deliver Mass Transit Corridors as part of the Sheffield Plan strategy for sustainable transport. Once confirmed, the infrastructure requirements will progress to design stage.	Northwest Sub-Area	SCC / SYMCA	S.106 / CIL, SCC Capital Programme, SYMCA Capital Programme, CRSTS 1, CRSTS2	2024 - 2029	Fundamental	SCC modelling work, in collaboration with SYMCA and other relevant LPAs
TR04	Transport - Local Road Network	Initial modelling through use of SCRTM1 and AIMSUN indicates that there is one junction on the LRN where direct mitigation is required. The modelling work continues to be refined and finalised, and there may be further junctions on the LRN that require mitigation measures. Initial proposals for mitigation include: introduction of signalisation and road widening. These initial mitigation measures are being discussed with SYMCA and local stakeholders. In particular, there is a need to ensure that mitigation measures integrate with the existing operation and the tram network, and wider proposals to deliver Mass Transit Corridors as part of the Sheffield Plan strategy for sustainable transport. Once confirmed, the infrastructure requirements will progress to design stage.	Northeast Sub-Area	SCC / SYMCA	SCC Captial Programme, SYMCA Capital Programme, CRSTS 1, CRSTS2, S.106 / CIL	2024 - 2029	Fundamental	SCC modelling work, in collaboration with SYMCA and relevant LPAs

Scheme Reference	Infrastructure type	Scheme description	Scheme location	Delivery body	Funding method	Delivery phasing	Prioritisation	Source of scheme
TR05	Transport - Sustainable / Public Transport	Initial modelling through use of SCRTM1 and AIMSUN indicates that there are a minimum of 58 locations / sites where direct mitigation is required. Initial proposals for mitigation include: improvements to bus stops (e.g. provision of upgraded shelters, Real Time Passenger Information), and changes to bus services (frequency and/or routeing) to better serve Sheffield Plan sites. These initial mitigation measures will be discussed with SYMCA so that agreement can be reached as to the optimal solution. Once confirmed, the infrastructure requirements will progress to design stage.	Citywide	SCC / SYMCA	S.106 / CIL, SCC Captial Programme, SYMCA Capital Programme, CRSTS 1, CRSTS2	2024 - 2029	Fundamental	SCC modelling work, in collaboration with SYMCA and relevant LPAs
TR06	Transport - Active Travel	Initial modelling through use of SCRTM1 and AIMSUN indicates that there are a minimum of 93 locations / sites where direct mitigation is required. Initial proposals for mitigation include: new active travel links (footways and cycleways) following likely pedestrian and cyclist desire lines; improving the quality of existing active travel links/wayfinding; installing and upgrading of crossings in the vicinity of Sheffield Plan sites to aid active travel and calm traffic; and improving pedestrian access (e.g. crossings/footway improvements) to bus stops closest to Sheffield Plan sites. These initial mitigation measures will be discussed with SYMCA, Connecting Sheffield, other LPAs, and wider stakeholders so that agreement can be reached as to the optimal solution. Once confirmed, the infrastructure requirements will progress to design stage.	Citywide	SCC / SYMCA	S.106 / CIL, SCC Captial Programme, SYMCA Capital Programme, CRSTS 1, CRSTS2	2029 - 2034	Fundamental	SCC modelling work, in collaboration with SYMCA, Connecting Sheffield, other relevant LPAs
TR07	Transport - Local Road Network	Bid for Major Road Network funding for provision of additional transport capacity to support housing and employment growth around Kelham and Neepsend in the Shalesmoor Gateway (A51 Penistone Road between Rutland Road and Shalesmoor). Encouragement of more travel by active modes (walking and cycling) and public transport (tram and bus). Improve journey times and reliability for all modes on the Inner Ring Road. Support emergency access to the Northern General Hospital. The outline business case is with DfT awaiting a decision.	Central Sub-Area	SCC	DfT - Major Road Network / National Roads Fund. SCC - Possible match funded	2024 - 2029	Integral	SCC
TR08	Transport - Local Road Network	Provision of increased highway capacity on a localised section of the A61 Chesterfield Road corridor – complemented by the Sheaf Valley cycle route which takes active travel users away from the busy intersection at Broadfield Road	Southwest Sub-Area	SCC	DfT NPIF / Better Buses Area Fund / Streets Ahead Local and Neighbourhood Transport Complimentary Programme (LaNTP)	2024 - 2029	Integral	SCC
TR09	Transport - Local Road Network	Parking improvement scheme in Kelham and Neepsend	Central Sub-Area	SCC	Local and Neighbourhood Transport Complimentary Programme (LaNTP) / s106	2024 - 2029	Fundamental	SCC
TR10	Transport - Local Road Network	Parking improvement scheme in St Vincents area	Central Sub-Area	SCC	Local and Neighbourhood Transport Complimentary Programme (LaNTP) / s106	2024 - 2029	Fundamental	SCC
TR11	Transport - Local Road Network	Parking improvement scheme in Effingham Street	Central Sub-Area	SCC	Local and Neighbourhood Transport Complimentary	2024 - 2029	Fundamental	SCC

Scheme Reference	Infrastructure type	Scheme description	Scheme location	Delivery body	Funding method	Delivery phasing	Prioritisation	Source of scheme
					Programme (LaNTP) / s106			
TR12	Transport - Local Road Network	Road safety improvements at Sheaf Street between Rail Station and Transport Interchange	Central Sub-Area	SCC	Local and Neighbourhood Transport Complimentary Programme (LaNTP)	2024 - 2029	Fundamental	SCC
TR13	Transport - Local Road Network	A programme of 17 pedestrian crossings	Citywide	SCC	Local and Neighbourhood Transport Complimentary Programme (LaNTP)	2024 - 2029	Fundamental	SCC
TR14	Transport - Local Road Network	Provision of 20mph speed limit orders within different locations across Sheffield	Citywide	SCC	Road Safety Fund (RSF), Corporate Investment Fund, via Community Infrastructure Levy / LaNTP / CRSTS	2024 - 2034	Fundamental	SCC
TR15	Transport - Local Road Network	A programme of part-time advisory 20mph speed limits outside schools.	Citywide	SCC	Road Safety Fund (RSF), Corporate Investment Fund, via Community Infrastructure Levy	2024 - 2029	Fundamental	SCC
TR16	Transport - Local Road Network	Parking management between Rother Valley Way - Meadowgate Ave (Roundabout) to Owlthorpe Greenway.	Southeast Sub-Area	SCC	Road Safety Fund (RSF), Corporate Investment Fund, via Community Infrastructure Levy	2024 - 2029	Fundamental	SCC
TR17	Transport - Local Road Network	The investigation into the introduction of a parking zone in the vicinity of Brookhouse Hill / Ivy Cottage Lane.	Southwest Sub-Area	SCC	Road Safety Fund (RSF), Corporate Investment Fund, via Community Infrastructure Levy	2024 - 2029	Fundamental	SCC
TR18	Transport - Active Travel	The provision of new crossings and accessibility measures for pedestrians on Abbey Lane.	Southwest Sub-Area	SCC	Mayoral Combined Authority Crossing Fund Road Safety Fund (RSF), Corporate Investment Fund, via Community Infrastructure Levy	2024 - 2029	Fundamental	SCC
TR19	Transport - Local Road Network	Installation of disabled parking bays in district centres	Citywide	SCC	Local and Neighbourhood Transport Complimentary Programme (LaNTP)	2024 - 2029	Fundamental	SCC
TR20	Transport - Sustainable / Public Transport	Proposed electrification of the Midland Mainline from Leicestershire / Nottinghamshire to Sheffield Midland Station.	Various locations in Leicestershire,	Network Rail	Network Rail / DFT - Integrated Rail Plan	TBC	Fundamental	Network Rail

Scheme Reference	Infrastructure type	Scheme description	Scheme location	Delivery body	Funding method	Delivery phasing	Prioritisation	Source of scheme
			Nottinghamshire, Derbyshire and Sheffield					
TR21	Transport - Sustainable / Public Transport	Bid for RYR funding for the proposed reintrodution of passenger services on the Barrow Hill line between Sheffield and Chesterfield, including new stations at Beighton and Killamarsh.	Southeast Sub-Area	SYMCA, Network Rail,	Restoring Your Railways / DfT	2024 - 2034	Integral	SYMCA / Network Rail
TR22	Transport - Sustainable / Public Transport	Bid for a proposed new rail station at Waverley.	Southeast Sub-Area	SYMCA, Network Rail	Restoring Your Railways / DfT	2029 - 2034	Integral	SYMCA / Network Rail
TR23	Transport - Sustainable / Public Transport	Bid for RYR funding for proposed reintroduction of passenger services on the Don Valley to Stocksbridge railway line including approximately five new stations along the route.	Central Sub-Area Northwest Sub-Area Stocksbridge/Deepcar Sub-Area East Sub-Area	SYMCA, Network Rail	Restoring Your Railways / DfT	2029 - 2034	Integral	SYMCA / Network Rail
TR24	Transport - Sustainable / Public Transport	Provision of new railway infrastructure on the Hope Valley Line including the extension of the Dore South curve to increase the capacity, new platform(s) and footbridge at Dore Station.	Southwest Sub-Area	SYMCA, Network Rail	Network Rail / DfT	2024 - 2029	Integral	Network Rail
TR25	Transport - Sustainable / Public Transport	New Tram Train stop and Park & Ride site at Magna	Rotherham East Sub-Area	SYMCA, RMBC	TCF / SYMCA	2024 - 2029	Integral	SYMCA
TR26	Transport - Sustainable / Public Transport	Proposed establishment of a bus franchising scheme (across South Yorkshire).	South Yorkshire-wide	SYMCA	SYMCA / CRSTS	2024 - 2029	Fundamental	SYMCA
TR27	Transport - Sustainable / Public Transport	Improvements to the bus network and facilities delivering the objectives defined in the Bus Service Improvement Plan at strategic areas.	South Yorkshire-wide	SYMCA, SCC	SYMCA / CRSTS	2024 - 2029	Integral	SYMCA
TR28	Transport - Sustainable / Public Transport	Procurement of 4 electric buses and charging infrastructure at Sheffield interchange.	Citywide	SYMCA, SCC	SYMCA / CRSTS	2024 - 2029	Integral	SYMCA
TR29	Transport - Sustainable / Public Transport	Meadowhall Interchange Mobility Hub, increased P&R provision with supporting amenities.	North Sub-Area East Sub-Area	SYMCA	SYMCA / CRSTS	2024 - 2029	Integral	SYMCA
TR30	Transport - Active Travel	Bid includes interventions to support active and sustainable travel, including connections to key employment areas. Awaiting decision from ATE.	East Sub-Area	SCC	ATF2 / SYMCA (from LaNTP (Network Management)	2024 - 2029	Fundamental	SCC
TR31	Transport - Active Travel	Oughtibridge cycle route	Stocksbridge/Deepcar Sub-Area	SCC	S106 / Other	2024 - 2029	Fundamental	SCC
TR32	Transport - Active Travel	Planned cycle route to link the City Centre / Granville Square to East Bank Road / Daresbury Road.	Central Sub-Area South Sub-Area East Sub-Area	SCC	Connecting Sheffield / ATF3	2024 - 2029	Fundamental	SCC
TR33	Transport - Active Travel	City Centre Cycle Hub - provion of a city centre cycle storage and management facility.	Central Sub-Area	SCC	ATF2 / LTP	2024 - 2029	Integral	SCC
TR34	Transport - Active Travel	Cycle route to link the city centre to Woodseats Road via Shoreham Street and Little London Road.	Central Sub-Area Southwest Sub-Area South Sub-Area	SCC	Connecting Sheffield / ATF2 / SYMCA	2024 - 2029	Fundamental	SCC
TR35	Transport - Sustainable / Public Transport	Integrated transport scheme to transform Sheffield City Centre into a greener, more accessible and attractive place to live, work and spend time.	Central Sub-Area	SCC	TCF / Connecting Sheffield / SYMCA	2024 - 2029	Integral	SCC
TR36	Transport - Active Travel	Provision of high-quality cycling and walking infrastructure and improved routes for bus services to connect communities in Kelham, Neepsend to the City Centre.	Central Sub-Area	SCC	TCF / Connecting Sheffield / SYMCA	2024 - 2029	Integral	SCC
TR37	Transport - Active Travel	Magna - Tinsley: Cycling and pedestrianised improvements, linking to improvements in Rotherham.	East Sub-Area Rotherham	SCC	TCF / Connecting Sheffield / SYMCA	2024 - 2029	Integral	SCC
TR38	Transport - Sustainable / Public Transport	Enhanced transport connectivity between Sharrow, Nether Edge and Broomhall linking into the city centre while at the same time improving journeys in the local area.	Central Sub-Area Southwest Sub-Area	SCC	TCF / Connecting Sheffield / SYMCA	2024 - 2029	Integral	SCC

Scheme Reference	Infrastructure type	Scheme description	Scheme location	Delivery body	Funding method	Delivery phasing	Prioritisation	Source of scheme
TR39	Transport - Active Travel	Residential cycle parking	Citywide	SCC	Local and Neighbourhood Transport Complimentary Programme (LaNTP) / s106	2024 - 2029	Fundamental	SCC
TR40	Transport - Sustainable / Public Transport	Provision of cycling, walking and public transport infrastructure to support key growth locations at Darnall, Attercliffe, the Advanced Manufacturing Innovation District (AMID), as well as other important employment and leisure areas across the Lower Don Valley.	Central Sub-Area East Sub-Area	SCC	TCF / Connecting Sheffield / SYMCA	2024 - 2029	Integral	SCC
TR41	Transport - Sustainable / Public Transport	Provision of active travel and accessibility improvements connecting Sheffield City Centre and the Northern General Hospital, and onward to the surrounding communities.	Central Sub-Area North Sub-Area	SCC	SYMCA / CRSTS	2024 - 2029	Integral	SCC
TR42	Transport - Active Travel	Provision of a new cycle hub at the Olympic Legacy Park to encourage active travel and improve links to and from Attercliffe High Street.	East Sub-Area	SCC	Levelling-up Fund and developer contributions	2024 - 2029	Integral	SCC
TR43	Transport - Sustainable / Public Transport	Proposed Abbeydale Road and Ecclesall Road corridor improvements including the delivery of a range of public transport, pedestrian access, highways and signal interventions.	Central Sub-Area Southwest Sub-Area	SCC, SYMCA	TCF / Connecting Sheffield / SYMCA	2024 - 2029	Integral	SCC
TR44	Transport - Sustainable / Public Transport	Proposed A61 South Chesterfield Road corridor improvements including the delivery of a range of public transport, pedestrian access, highways and signal interventions.	Central Sub-Area South Sub-Area	SCC, SYMCA	SYMCA / CRSTS	2024 - 2029	Integral	SCC
TR45	Transport - Sustainable / Public Transport	Proposed A61 North Penistone Road corridor improvements including the delivery of a range of public transport, pedestrian access, highways and signal interventions.	Central Sub-Area Northwest Sub-Area Chapeltown/High Street Sub-Area	SCC, SYMCA	SYMCA / CRSTS	2024 - 2029	Integral	SCC
TR46	Transport - Sustainable / Public Transport	Proposed Sheffield to High Green corridor improvements including the delivery of a range of public transport, pedestrian access, highways and signal interventions.	Central Sub-Area Northwest Sub-Area Chapeltown/High Street Sub-Area	SCC, SYMCA	SYMCA / CRSTS	2024 - 2029	Integral	SCC
TR47	Transport - Sustainable / Public Transport	Improved cycle connections to reservoirs and surrounding countryside; new Underbank off-road loop	Stocksbridge/Deepcar Sub-Area	SCC	Town Deal Funding	2024 - 2029	Beneficial	SCC
TR48	Transport - Sustainable / Public Transport	Manchester Road Place-making - Improved highway and streetscape, new public spaces, town gateways, and visitor car park	Stocksbridge/Deepcar Sub-Area	SCC	Town Deal Funding	2024 - 2029	Beneficial	SCC
TR49	Transport - Sustainable / Public Transport	Buses for Stocksbridge- Provision of enhanced connections to and within the town	Stocksbridge/Deepcar Sub-Area	SCC	Town Deal Funding	2024 - 2029	Fundamental	SYMCA
ED01	Education - Primary	To support an existing committed new housing development in Oughtibridge, the LEA is undertaking a feasability study for potentially expanding a small school in the Stocksbridge/Deepcar area. This would create 70 additional primary school places from September 2024.	Stocksbridge/Deepcar Sub-Area	SCC	Developer contributions / capital funding	2024-2029	Fundamental	LEA feasibility study - To support housing development in Oughtibridge
ED02	Education - Primary	The LEA intends to expand a school within East Sheffield to create 105 additional primary school places. These will be available from September 2024 subject to approval.	East Sub-Area	SCC	Developer contributions / capital funding	2024-2029	Fundamental	SSC (LEA)
ED03	Education - Secondary	Projects are underway to deliver an additional 535 secondary school places across Silverdale School and King Ecgberts School, both in the south west of the city. These places will be available from September 2023.	Southwest Sub-Area	SCC	Developer contributions / capital funding	2024-2029	Fundamental	SSC (LEA)
ED04	Education - Secondary	Extension(s) to existing secondary schools to create new capacity equivalent to six forms of entry in Planning Area 1, to support demand arising from growth on sites allocated in the Sheffield Plan	Central Sub-Area Southwest Sub-Area	SCC	Developer contributions	2029-2039	Fundamental	SSC (LEA)
ED05	Education - Secondary	Extension(s) to existing secondary schools to create new capacity equivalent to two forms of entry in Planning Area 2, to support demand arising from growth on sites allocated in the Sheffield Plan	Central Sub-Area Northwest Sub-Area Stocksbridge/Deepcar Sub-Area	SCC	Developer contributions	2029-2039	Fundamental	SSC (LEA)

Scheme Reference	Infrastructure type	Scheme description	Scheme location	Delivery body	Funding method	Delivery phasing	Prioritisation	Source of scheme
ED06	Education - Secondary	Extension(s) to existing secondary schools to create new capacity equivalent to four forms of entry in Planning Area 5, to support demand arising from growth on sites allocated in the Sheffield Plan	Central Sub-Area East Sub-Area	SCC	Developer contributions	2029-2039	Fundamental	SSC (LEA)
ED07	Education - Secondary	Extension(s) to existing secondary schools to create new capacity equivalent to one form of entry in Planning Area 7, to support demand arising from growth on sites allocated in the Sheffield Plan	Central Sub-Area South Sub-Area	SCC	Developer contributions	2029-2039	Fundamental	SSC (LEA)
ED08	Education - Special Educational Needs	Provision of a new SEND school meeting citywide needs, due to open in the short term.	Citywide	SCC	Department for Education funding	2024-2029	Fundamental	SSC (LEA)
ED09	Education - Special Educational Needs	Provision of a new SEND school providing for longer-term future needs, planning jointly with (and helping to meet joint needs with) Barnsley Metropolitan Borough Council.	Citywide/Barnsley	SCC, BMBC	Department for Education funding	2024-2029	Fundamental	SSC (LEA)
HE01	Health - Primary Healthcare	Provision of at least one new primary healthcare facility (providing GP services, mental health services and other community healthcare needs) within the Central Sub-Area, potentially alongside extensions to existing facilities capable of serving the Central Sub-Area, to meet the primary healthcare needs arising from the significant growth in patients arising in the area.	Central Sub-Area	NHS South Yorkshire ICB	Developer contributions, potentially Department for Health funding	2024-2034	Fundamental	NHS SY ICB
GI01	Green Infrastructure - Open Space and Public Realm	Delivery of a new waterside park (Bacon Island Park) along the northern edge of the River Don; including a new public square and links to nearby open space	Central Sub-Area	SCC, developer(s)	Developer contributions / direct delivery - site allocations KN03, KN05, KN07, KN13, KN15, KN21, KN24, KN27, KN30, and KN36A	2029-2034	Fundamental	SCC/Sheffield Plan
GI02	Green Infrastructure - Open Space and Public Realm	Delivery of Moorfoot Square including new open space and green space provision	Central Sub-Area	SCC, developer(s)	Developer contributions / direct delivery - site allocations HC03, HC08, and HC11	2029-2034	Fundamental	SCC/Sheffield Plan
GI03	Green Infrastructure - Open Space and Public Realm	Provide new open space provision at Woodside, and create improved connections to recreation, leisure, and play facilities at Parkwood Springs, Nottingham Cliff Park, and Denholm Close	Northeast Sub-Area	SCC, developer(s)	Developer contributions / direct delivery - site allocations NES01 to NES35, including strategic sites NES01, NES03 to NES07 and NES09	2024-2029	Fundamental	SCC/Sheffield Plan
GI04	Green Infrastructure - Open Space and Public Realm	Deliver Site Allocations SU01 to SU57, with a focus on the site allocations defined in PolicyCA3A – Priority Location in Furnace Hill and Policy CA3B – Catalyst Site at the Gateway between Scotland Street, Smithfield, and Snow Lane; Improve public realm to address current lack of amenity and greenspace; expand Grey to Green route from West Bar	Central Sub-Area	SCC, developer(s)	Developer contributions / direct delivery in conjunction with housing development	2024-2029	Integral	SCC/Sheffield Plan
GI05	Green Infrastructure - Open Space and Public Realm	Deliver Site Allocations SU01 to SU57, with a focus on the site allocations defined in PolicyCA3A – Priority Location in Furnace Hill and Policy CA3B – Catalyst Site at the Gateway between Scotland Street, Smithfield, and Snow Lane; Improve public realm to address current lack of amenity and greenspace; expand Grey to Green route from West Bar	Central Sub-Area	SCC, developer(s)	Developer contributions / direct delivery in conjunction with housing development	2024-2029	Integral	SCC/Sheffield Plan

Scheme Reference	Infrastructure type	Scheme description	Scheme location	Delivery body	Funding method	Delivery phasing	Prioritisation	Source of scheme
GI06	Green Infrastructure - Open Space and Public Realm	Deliver Site Allocations SU01 to SU57, with a focus on the site allocations defined in PolicyCA3A – Priority Location in Furnace Hill and Policy CA3B – Catalyst Site at the Gateway between Scotland Street, Smithfield, and Snow Lane; Improve public realm to address current lack of amenity and greenspace; expand Grey to Green route from West Bar	Central Sub-Area	SCC, developer(s)	Developer contributions / direct delivery in conjunction with housing development	2024-2029	Integral	SCC/Sheffield Plan
GI07	Green Infrastructure - Open Space and Public Realm	Housing and open space allocation (net housing area 7.41ha)	Southeast Sub-Area	SCC, developer(s)	Developer contributions / direct delivery in conjunction with housing development	2029-2034	Integral	SCC/Sheffield Plan
GI08	Green Infrastructure - Open Space and Public Realm	Housing and open space allocation (net housing area 6.72ha); must ensure that areas of noted ecological value are not adversely affected; minimum 15 metre buffer should be provided to the Local Wildlife Site; Connective ecological corridors/areas in accordance with the Local Nature Recovery Strategy to be maintained on site and removed from the developable area. BNG should be delivered on site	South Sub-Area	SCC, developer(s)	Developer contributions / direct delivery in conjunction with housing development	2029-2034	Integral	SCC/Sheffield Plan
GI09	Green Infrastructure - Open Space and Public Realm	Housing and open space allocation (net housing area 1.5ha)	South Sub-Area	SCC, developer(s)	Developer contributions / direct delivery in conjunction with housing development	2024-2029	Integral	SCC/Sheffield Plan
GI10	Green Infrastructure - Playing pitches	Provision of additional football pitches to meet increasing demands, espeically within the Central and East sub-areas. The exact form of provision is not yet known, but should be sufficient to serve a total of 81 additional teams as a result of population change through to 2038.	Central Sub-Area East Sub-Area	SCC	Developer contributions / capital funding	2024-2039	Beneficial	SSC- Playing Pitch Strategy and Action Plan 2022
GI11	Green Infrastructure - Playing pitches	Provision of additional cricket pitches to serve forecast demand arising across the city. The exact form of provision is yet to be established but should be sufficient to serve a total of 18 additional teams as a result of population change through to 2038.	Citywide	SCC	Developer contributions / capital funding	2024-2039	Beneficial	SSC- Playing Pitch Strategy and Action Plan 2022
GI12	Green Infrastructure - Playing pitches	Provision of additional capacity for increasing rugby demands, specifically rugby league. The exact need and form of provision is yet to be established.	Citywide	SCC	Developer contributions / capital funding	2024-2039	Beneficial	SSC- Playing Pitch Strategy and Action Plan 2022
GI13	Green Infrastructure - Playing pitches	Provision for new hockey facilities, specifically 4 full sized 3G artificial grass pitches in location(s) to be determined, with the East and North of the city being identified areas of particular need.	Northwest Sub-Area Northeast Sub-Area East Sub-Area	SCC	Developer contributions / capital funding	2024-2039	Beneficial	SSC- Playing Pitch Strategy and Action Plan 2022
GI14	Green Infrastructure - Allotments	Provision of citywide allotments to accomodate the existing shortfall and future growth, particularly in central locations. Any site will need at least 25 small plots to be viable. Criteria is still to be confirmed, but a provsional indicative minimum site size should be 3,000 square meters, with a minimum site size of 0.5 hectares when factoring in access.	Central Sub-Area Citywide	SCC	Developer contributions / direct on-site delivery	2024-2034	Beneficial	SSC
CF01	Community facilities - Burial sites and crematoria	There is an identified need for additional burial and crematoria capacity within the city, although this has not yet been fully quantified and there is not currently a specific strategy for delivery against this need.	Citywide	SCC	Capital funding	2024-2029	Fundamental	SSC
CF02	Community facilities - Burial sites and crematoria	There is an identified need for additional mortuary and coroner capacity within the city, although this has not yet been fully quantified and there is not currently a specific strategy for delivery against this need.	Citywide	SCC	Capital funding	2024-2029	Fundamental	SCC
CF03	Community facilities - Libraries	Rebuild of Stocksbridge Library	Stocksbridge/Deepcar Sub-Area	SCC	Town Deal Funding	2024-2029	Beneficial	SSC
CF04	Community facilities - Libraries	Rebuilding of the entrance to Hillsborough Library	Northwest Sub-Area	SCC	Capital funding	2024-2029	Beneficial	SSC

Scheme Reference	Infrastructure type	Scheme description	Scheme location	Delivery body	Funding method	Delivery phasing	Prioritisation	Source of scheme
CF05	Community facilities - Community centres	Provision of accessible space for day-to-day community gatherings within the central sub-area as it transitions into more of a mixed-use neighbourhood with a significant residential presence. The exact form of provision will need to be established as other community facility schemes continue to be developed, but it could be associated with any potential improvements to the city's Central Libary.	Central Sub-Area	SCC, potential community groups/trusts, developer(s)	Developer contributions / direct on-site delivery	2024-2034	Beneficial	SCC
UT01	Utilities - Electricity	Capacity upgrades to Mansfield Road electricity substation, identified as likely to be required to be 2031	South Sub-Area Southeast Sub-Area	Northern Powergrid	Northern Powergrid via Distribution Use of System charges	2029-2034	Fundamental	Arup analysis of Northern Powergrid data
UT02	Utilities - Electricity	Capacity upgrades to Marmion Road electricity substation, identified as likely to be required to be 2035	Southwest Sub-Area	Northern Powergrid	Northern Powergrid via Distribution Use of System charges	2034-2039	Fundamental	Arup analysis of Northern Powergrid data
UT03	Utilities - Electricity	Capacity upgrades to Tankersley Park electricity substation, identified as likely to be required to be 2035	Chapeltown/High Green Sub-Area	Northern Powergrid	Northern Powergrid via Distribution Use of System charges	2034-2039	Fundamental	Arup analysis of Northern Powergrid data
UT04	Utilities - Electricity	Capacity upgrades to Wheatacre Road electricity substation, identified as likely to be required to be 2035	Stocksbridge/Deepcar Sub-Area	Northern Powergrid	Northern Powergrid via Distribution Use of System charges	2034-2039	Fundamental	Arup analysis of Northern Powergrid data
UT05	Utilities - Electricity	Capacity upgrades to Crookesmoor Road electricity substation, identified as likely to be required to be 2035	Northwest Sub-Area	Northern Powergrid	Northern Powergrid via Distribution Use of System charges	2034-2039	Fundamental	Arup analysis of Northern Powergrid data
UT06	Utilities - District heating	Connection to the Sheffield Heat Network for schemes in the Central Sub-Area and surroundings with identified potential to make a viable connection to the network: CW11, HC04, HC09, HC10, HC11, HC12, HC13, HC14, HC15, HC16, HC17, HC18, LR01, LR03, LR04, SV04, SV06, SV07, SV08, SV09 and SV12.	Central Sub-Area	Veolia	Developers via connection charges	2024-2039	Integral	Veolia
UT07	Utilities - Sewerage	Capacity upgrades to sewerage capacity within the central sub-area, potentially consisting of the provision of a new separate system to accommodate surface water run off and therefore provide additional capacity within the existing sewerage system for foul flows from new development. The exact nature of such a scheme remains to be identified by Yorkshire Water.	Central Sub-Area	Yorkshire Water	Yorkshire Water funding settlement	2029-2034	Fundamental	Yorkshire Water
UT08	Utilities – Flood risk management	Upper Don Valley Flood Protection Scheme – to protect communities, major roads and development land in the Upper Don, Loxley and Little Don valleys through Stocksbridge, Oughtibridge, Hillsborough and the City Centre. Works include the construction of new flood defences, as well as interventions such as reforestation to reduce water run-off into the catchment.	Central Sub-Area Northwest Sub-Area Stocksbridge/Deepcar Sub-Area	SCC, Environment Agency	National Flood Investment Programme	2024-2029	Fundamental	SCC
UT09	Utilities – Flood risk management	Sheaf Catchment Flood Protection Scheme – to protect communities, major roads, the Midland Main Line/Sheffield Railway Station and development land in the Sheaf and Porter Brook valleys in the south of the city and the City Centre. Works include the construction of new flood defences, as well as interventions such as reforestation to reduce water run-off into the catchment.	Central Sub-Area Southwest Sub-Area South Sub-Area	SCC, Environment Agency	National Flood Investment Programme	2024-2029	Fundamental	SCC
UT10	Utilities – Flood risk management	Blackburn Brook Flood Protection Scheme – to protect communities in Chapeltown and Ecclesfield.	Chapeltown/High Green Sub-Area	SCC, Environment Agency	National Flood Investment Programme	2024-2029	Fundamental	SCC
UT11	Utilities – Flood risk management	Three Brooks Flood and Environmental Scheme – piloting new sustainable approaches to draining storm water from residential areas in Manor and Arbourthorne, alongside revitalisations of three natural watercourses – the Car Brook, Kirkbridge Dyke and Jervis Lumb. Works include wetland detention basins to store rainwater and slow flows, also cleaning these flows before they reach watercourses and reducing the likelihood of sewage overflows.	East Sub-Area South Sub-Area	SCC, Environment Agency, Yorkshire Water	National Flood Investment Programme	2024-2029	Fundamental	SCC