NEW CARRINGTON MASTERPLAN – COSTING OF INFRASTRUCTURE

70120204

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1. Introduction

1.1 This technical note provides the basis for the costs allowed for against the various strategic infrastructure proposals required to support the delivery of the New Carrington Masterplan.

1.2 This note should be read alongside the following:

- The WSP "Delivery Strategy: Options Report". This report sets out the options appraised for strategic infrastructure and concludes with the preferred approach to strategic infrastructure for each discipline.
- The detailed cost breakdown on an annual basis at **Appendix A** which provides costs attributed to specific years of development delivery across each technical discipline.

1.3 This note provides further detail on how the actual costs have been derived for each technical discipline.

2. Transport

2.1 Transport-related infrastructure required for the New Carrington allocation consists of:

- Strategic Active Travel Routes;
- Improvement to existing public rights of way;
- New and enhanced bus services;
- New link roads providing access to plots and relieving the A6144;
- Bridges to facilitate crossing of Red Brook and the Greenway by the link roads; and
- Off-site highway improvements identified in Appendix D of PfE.

2.2 A review of the level of provision required for each of the above items has been undertaken and is summarised in the WSP document Delivery Strategy: Options Report.

2.3 Key findings and outputs of the review include:

- A set of principles for the provision of Strategic Active Travel Routes through the site, including design standards to be adhered to;
- Typical cross-sections of strategic active travel routes and new road links;
- Indicative routes for Strategic Active Travel Routes and the length of each route;
- Details of existing public rights of way to be improved as leisure routes and the length of each;
- Indicative routes for new road links to establish expected length of each, noting that final alignments are dependent on the layout of the sites they pass through;
- A number of off-site highway works which are not considered necessary to deliver the New Carrington Masterplan :
  a) Western Gateway Infrastructure Scheme (WGIS);
  b) Altrincham - A56 Dunham Road / Park Road / Charcoal Road: Signals intervention;
  c) Rixton - Manchester Road / Warburton Bridge Road Junction: carriageway widening;
  d) Flixton Road Signals (delivered by CRR); and
  e) Carrington Link / Carrington Spur / Banky Lane (delivered by CRR).
- High level layout drawings for the off-site improvements that are considered necessary.

2.4 The above items were provided to Amey to undertake a cost estimate for each element of the works. Further detail is available in the Amey costing technical note.

BUS SERVICE IMPROVEMENTS

2.5 WSP engaged with the TfGM bus operations team in October and November 2024 in order to understand the latest position on expected operating costs for the bus improvement package set out in the New Carrington Outline Transport Strategy.

2.6 Six additional buses would be required to deliver the improvement package, as a cost of £275k per bus per year. This results in a total of £1.65m year for a period of up to five years, after which it is expected that increases in bus patronage would allow the services to be commercially viable.

ACTIVE TRAVEL ROUTES RELATED TO CARRINGTON RELIEF ROAD

2.7 A number of active travel schemes which were previously part of the Carrington Relief Road package of works now need to be delivered separately to support the Masterplan. These are:

- Broadway to Common Lane (c.£5m)
- A6144 through Carrington Village to Flixton Junction (c.£7m)
- Flixton junction to Banky Lane junction via A6144 (c.£4m)

3. Social Infrastructure

OVERVIEW

3.1 The social infrastructure workstream comprises the following infrastructure types:

- Education provision, including early years, primary, secondary, post-16 and Special Education Needs (SEN); and
- Primary healthcare infrastructure.

3.2 The costing exercise has been led by WSP and is based on data and engagement with the following relevant stakeholders:

- Trafford Council's Education Team, with regard to education infrastructure; and
- NHS Property Services and NHS Greater Manchester Integrated Care Board (ICB), with regard to primary healthcare infrastructure.

3.3 The outputs of the costings exercise have been provided to Deloitte for the purposes of informing the 'New Carrington Funding Mechanism and Delivery Strategy', as prepared by Deloitte and dated February 2025.

ASSUMPTIONS AND EXCLUSIONS

3.4 The following assumptions and exclusions are relevant to the costing of both education and healthcare infrastructure:

- The costing exercise was undertaken in November 2024 and is therefore based on assumptions known at that time with regard to the demand and mitigation assumptions for social infrastructure generated by development at New Carrington;
- A phasing trajectory schedule for New Carrington was provided by Trafford Council for the purposes of the costing exercise;
- Infrastructure costs are based on the total demand generated by New Carrington with the assumption that all residential development as identified by the site allocation comes forward;
- As a housing mix is not yet known, Trafford Council has assumed a split of 80% houses and 20% apartments;
- Costs do not account for land acquisition;
- Costs do not account for any abnormals;

- Costs do not account for any professional fees;
- Costs are subject to indexation; and
- A viability assessment has not been undertaken.

APPROACH TO SOCIAL INFRASTRUCTURE COSTING EXERCISE

3.5 The following section sets out the approach to the costing exercise, taking education and primary healthcare infrastructure in turn.

Education infrastructure

3.6 The following approach has been confirmed by engagement with Trafford Council's Education Team, for the purposes of calculating education costs for New Carrington.

3.7 The pupil yield generated by New Carrington is based on the DfE Pupil Yield Dashboard[1], for Trafford local authority applied to the residential development phasing trajectory and assumptions provided by Trafford Council. The pupil yield calculations account for all types of education, as set out in Table 1.

3.8 With regard to costing for early years, primary, secondary and post-16 sixth form, the following approach and assumptions are applied:

- Costs for early years, primary, secondary, post-16 are based on the Department for Education (DfE) Local Authority School Places Scorecards for Trafford local authority2. Note that the DfE Scorecards data includes further detail on costing methodology and assumptions, as presented in the 'Technical Notes' section.
- In line with the DfE Securing Contributions for Education non-statutory guidance3, the cost per pupil for early years provision is assumed to be the same as for a primary school. Similarly, sixth form places are aligned with the cost for a secondary school place.
- Note that for the purposes of this costing exercise the 'New School' per pupil cost is used, which represents a higher-end cost assumption, though it is noted that a proportion of pupil yield will be accommodated through school expansion projects. Therefore, the 'New School' cost assumption is used as a worst case scenario until it is established by Trafford Council's Education Team as to the proportion of pupils that could be accommodate within existing provision.

3.9 With regard to SEN provision, the costing exercise is based on:

- For SEN provision, per pupil costs are based on evidence produced by the latest EBDOG National School Delivery Benchmarking study[4].

Table 1. Per pupil cost assumptions

Education type	Cost per pupil
Early years	£23,865
Primary	£23,865
Secondary	£28,912
Post-16 Sixth Form	£28,912
SEN	£96,806

[1] Accessed at: https://department-for-education.shinyapps.io/pupil-yields-dashboard/
[2] Accessed at: department-for-education.shinyapps.io/la-school-places-scorecards/
[3] Accessed at: Securing developer contributions for education
[4] Accessed at: https://documents.hants.gov.uk/property-services/NationalSchoolDeliveryBenchmarkingreport.pdf

Primary healthcare infrastructure

3.10 NHS Property Services has provided cost data to mitigate the impact of development at New Carrington. The data and information was provided in Q4 2024, and is therefore subject to indexation and review.

3.11 NHS Property Services has advised that ICB 'new build' cost benchmarks should be used, though it is noted that an interim mitigation solution to expand provision within existing facilities may be considered appropriate, however such projects have not yet been identified.

3.12 Reflecting the total allocation at New Carrington for residential development, NHS Property Services has advised that the approximate cost would be £7.2 million. Note that the cost reflects build costs only and does not include land.

4. Energy and Utilities

INTRODUCTION

4.1 The Energy and Utilities infrastructure required on-site is dictated by the necessary provision of:

- Domestic and non-residential space heating
- Domestic and non-residential hot water
- Electrical supply

4.2 A technological evaluation of the available resources and potential energy solutions for the New Carrington has been undertaken and is described in the Options Report issued by WSP.

4.3 For the preferable option determined in the evaluation, a costing assessment has also been undertaken. The cost information used in the costing assessment has been calculated and collated by WSP. Material equipment costs have been sourced from a combination of supplier tenders and past project experience. Appropriate estimates were applied for other project costs related to infrastructure design, construction and testing.

4.4 It should be noted that as design work is completed and further assessment undertaken, it may be determined that other design options, such as a heat network powered by other sources, multiple heat networks or individualised heating technologies may be more viability or feasible.

FINAL ENERGY SOLUTION

4.5 The final energy solution identified as the "preferred option" consists of a heat network connected to the Carrington Power Station. Waste heat from the power station cooling system would be used as the heat source for water-source heat pumps (WSHPs). These heat pumps would be accompanied by electric boilers and situated in a primary energy centre (EC) for an all-electric heating solution. Thermal storage tanks would be used to balance the heat network and optimise the use of the plant.

4.6 Due to contractual negotiations and the detailed design work required with an additional 12-18 months for building construction, the primary EC would likely not be expected before 2029. When it becomes operational, it has been assumed that 2no. 5MW WSHPs, 2no. 3.6MW electric boilers and 100m^3 Thermal Storage vessel would be installed along with the necessary mechanical and electrical services to service that capacity. The EC will then be capable of serving the heat demands of plots already delivered up to 2030 and, given the plant surplus capacity, the demands of the plots planned to be delivered up to 2033.

4.7 The plots which have already received planning permission and have begun delivering homes (CR1A, CR1B, PR4A), or will begin soon (CE2A, CE2B), have been included in the assessment for the final energy solution. An alternative, isolated energy strategy will have been devised for each of these plots, most likely involving the installation of gas boilers. For the purposes of this assessment though, it is assumed that the plots will connect

to the site-wide heat network once the gas boilers have reached the end of their life, assumed to be 10 years after the plot delivery start date, i.e. connection in 2031.

4.8 In 2033/2034, the remaining plant equipment will be installed, i.e. 1no. 5MW WSHP, 1no. 3.6MW electric boiler and the remaining 100m^3 Thermal Storage vessel and associated mechanical and electrical services.

4.9 An equipment list includes:

- Energy Centre building costs (e.g. land purchase, building construction, utilities connection)
- Water-Source Heat Pumps
- Electric Boilers
- Thermal Storage vessels
- Low Temperature Hot Water Plate Heat Exchanger
- Mechanical services, such as:
  - Pumping,
  - Pressurisation & Expansion
  - Filtration and vacuum degassing,
  - Water quality treatment and monitoring,
- Electrical services, such as:
  - Transformers
  - HV/LV Switchboards
  - Control systems

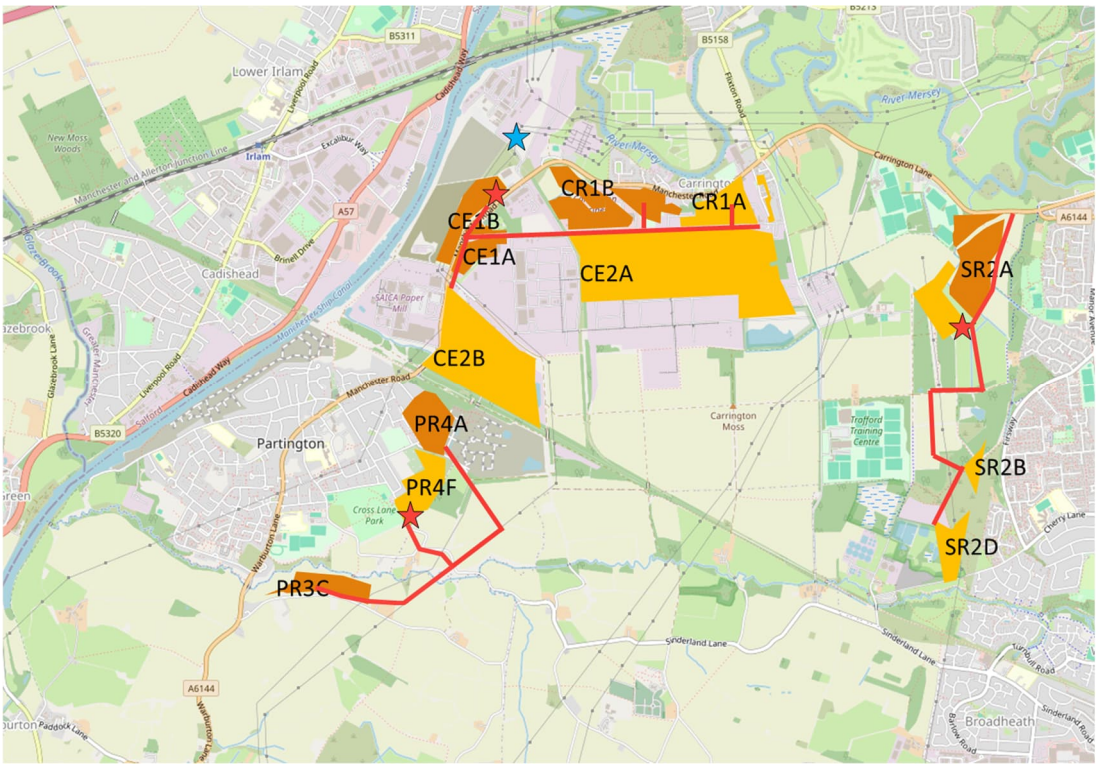
4.10 Distribution network costs are included in the “Energy Final” line item of the phased infrastructure cost plan.

INTERIM ENERGY SOLUTION

4.11 Before the primary energy centre (EC) can be fully designed, built and begin to operation, an interim energy solution would be necessary. Before 2029 13no. plots begin to deliver homes and commercial buildings. These could be broadly grouped into three areas, so it is expected that three temporary ECs would be required to supply heat to those plots, and for an all-electric heating solution, they would be powered by Air-Source Heat Pumps (ASHPs) and electric boilers. The 5no. plots which have already received planning permission have been assumed to rely on an alternative energy source, such as gas boilers or individual heat pumps, so have not been included in the interim solution.

4.12 The three ECs would be located in Partington East, Sale West and close to Carrington Village as per **Error! Reference source not found.**, where the possible temporary EC locations are shown as red stars, the permanent primary EC is the blue star, and the red lines represent indicative routes of pipes. The darker zones on the map represent fully built-out plots and the partially built-out plots are shown in the lighter orange colour.

Figure 1. Energy Infrastructure phasing at end of 2027/2028



- Partington East temporary EC would supply heat to plots PR3C, PR4F, PR3D.
- Sale West temporary EC would serve SR2A, SR2D, SR2B.
- Carrington temporary EC would serve CE1A and CE1B.

4.13 The temporary ECs would continue to operate until the primary EC becomes operational, in 2029. At which point, the three separate smaller heat networks are merged and connected to the primary EC, creating a single site-wide heat network. The temporary ECs are subsequently decommissioned.

DISTRIBUTION NETWORK

4.14 The distribution network, consisting of buried pipework transporting heated water to the boundary of each plot from an energy centre, would be built-out in line with the programme phasing. By the first year of each plot's delivery, the pipework connecting that plot to the appropriate temporary ECs would be installed, connected and commissioned. The additional cost of the pipes connecting each plot has been applied in the first year of each plot delivery. For example, SR2B begins delivery in 2027/28, so the pipe costs are applied in 2027.

4.15 The pipework routing has been planned for the final network routing to avoid additional civils works, where possible. Therefore, the pipework may not take the most direct and obvious path in the earlier stages but will be optimised for the final build-out. In the case of plot SR2B, another plot further from the temporary EC (SR2D) must be connected earlier in the programme, therefore the pipework must be run past SR2B. At the point of delivering SR2B, the additional pipework required is therefore minimal.

ELECTRICITY CONNECTIONS

4.16 Costs for electrical connections to the site have been based on discussions with Electricity North West (ENWL). It is understood that there is some spare capacity within the ENWL network which can be utilised for the initial residential phases. However, a new grid connection will be required support the full extent of development proposals.

4.17 Costs are based on ENWL averages and comprise:

- Primary substation
- 132kV grid supply point and connection to primary substation including 2km cable
- 19 no. distribution substations
- 8,000m of 11kV cable from primary substation to distribution substations

4.18 With regard to the approach to phasing of costs, it is anticipated that the need for the primary substation and new grid supply point will be triggered by the first phase of commercial development (CE1B and CE1B) scheduled for 2026/27. The remainder of the costs provided account for the distribution substations and 11kV cables are have been introduced as development plots are scheduled to be delivered in accordance with the development trajectory.

POTABLE WATER CONNECTIONS

4.19 Through discussion with United Utilities (UU), it is anticipated that potable water supply to the site will come from existing trunk mains within the site boundary. Details of the points of connection and pipework routes is subject to further assessment by UU.

4.20 Estimated costs for new strategic distribution water mains have been provided assuming installation of 6000m of 180 – 315mm OD barrier pipe and an allowance for connections and fittings such as valves, wash outs, etc.

4.21 Phasing of costs is distributed evenly across the development trajectory as is it anticipated the network will be built out linearly as development plots come forward.

UTILITY DIVERSIONS

4.22 No allowance has been made for strategic utility diversions. It is anticipated that strategic utility assets within the site will be kept in place with development set back in accordance with the relevant wayleave / easement restrictions. Any minor utility diversions required are to be met by individual plot developers to suit their development proposals.

5. Flood Risk and Drainage

SURFACE WATER DRAINAGE

5.1 It has been assumed that SuDS features will be delivered on a plot-by plot basis with discharge to local watercourse / public sewer as appropriate. The location of the SuDS features and discharge point is not yet known as further surveys and design is required to inform this.

5.2 An assessment of total attenuation volumes required for each plot based on discharge at greenfield runoff rates has been carried out. This is based on the following:

- Discharge at greenfield runoff rate equivalent to 1.6 litres per second per hectare
- Impermeable area equivalent to 60% of gross development area of each plot
- Allowance for 10% additional impermeable area due to future urban creep

5.3 It has been further assumed that 20% of the total required attenuation volume for each plot is to be delivered by source control techniques, such as rain gardens, swales, etc within the streetscape / private demise. The remaining 80% is to be provided within site control or regional control techniques in the form of detention basins or ponds. Costs have been provided for these site / regional control features only, and include allowances for:

- Excavation of material (non-contaminated) to form basins / ponds and disposal on site;
- Inlet / outlet headwalls, flow control chambers and pipework to outfall (avg 50m per plot)
- Landscape planting to basins / ponds

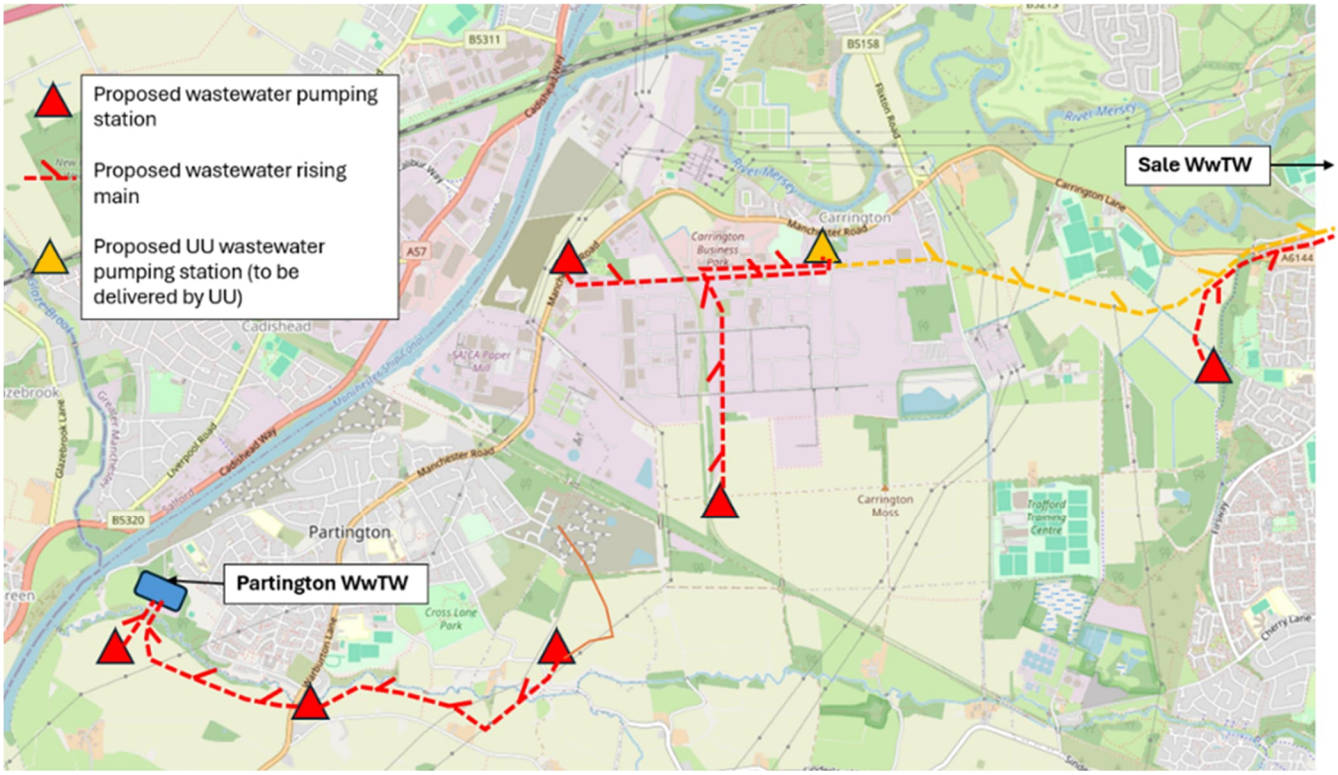
5.4 The approach to phasing of costs for surface water infrastructure has been based on the delivery trajectory. A cost has been assigned to each plot pro rata based on the gross developable area. It has then been assumed that the surface water drainage infrastructure will need to be constructed in Year 1 of the relevant development plot.

FOUL DRAINAGE

5.5 Strategic foul drainage infrastructure to serve the site has been based on discussion with United Utilities (UU). UU are due to construct a new pumping station in northern part of the site near Carrington Village with rising main discharge to Sale WwTW. This will serve as the discharge location for most foul water flows from NCM north of the former railway. Costs for the UU pumping station are excluded as UU are set to fund and deliver this themselves.

5.6 Further pumping stations are likely to be required across the site to pump foul flows to the UU pumping station or alternative discharge locations (Partington WwTW for plots south of the former railway; and Sale WwTW for plots at Sale West). The number and location of pumping stations is to be confirmed subject to surveys and further design, although UU have noted they require this to be limited with several plots sharing a pumping station. It has therefore been considered that a total of 6 no. foul pumping stations and associated rising mains will be required. Refer to Figure 2 below.

Figure 2. Strategic Foul Water Drainage Infrastructure



5.7 Total costs for strategic foul infrastructure have been provided and include allowances for:

- 6 no. Adoptable foul water pumping stations (approx. 50 litres per second discharge), including associate hardstanding, kiosk, power supply and telemetry.
- 6 no. Emergency storage tanks at 4,000m3 each
- 8,300m of rising main (200mm diameter) from pumping station to discharge locations as indicated in Figure 2.
- 4,000m of gravity sewer (225mm diameter) to connect plots to pumping stations

5.8 The approach to phasing of costs for surface water infrastructure has been based on the delivery trajectory. An average cost per pumping station to include storage tanks, rising mains and gravity sewers has been calculated. Costs for each pumping station have then been applied at Year 1 of the plot delivery for those plots that are considered to discharge to the relevant pumping station.

Appendix A

Infra Costs per year		2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34	2034/35	2035/36	2036/37	2037/38	2038/39	2039/40	2040/41	2041/42	2042/43
	Cost Plan Totals																		
SUDS	£8,660,996	£1,380,216	£644,551	£320,717	£172,181	£1,195,650	£260,869	£187,424	£2,564,174	£753,160	£273,861	£187,424	£227,091	£0	£493,677	£0	£0	£0	£0
Foul Water	£83,633,850	£13,938,975	£27,877,950	£13,938,975	£0	£13,938,975	£0	£0	£0	£0	£13,938,975	£0	£0	£0	£0	£0	£0	£0	£0
Electric	£33,480,000	£2,526,315	£17,480,000	£1,684,210	£842,105	£3,368,420	£842,105	£842,105	£842,105	£1,684,210	£842,105	£842,105	£842,105	£0	£842,105	£0	£0	£0	£0
Potable Water	£25,341,525	£1,949,348	£1,949,348	£1,949,348	£1,949,348	£1,949,348	£1,949,348	£1,949,348	£1,949,348	£1,949,348	£1,949,348	£1,949,348	£1,949,348	£0	£1,949,348	£0	£0	£0	£0
Energy final	£75,755,638	£1,804,824	£1,804,824	£11,836,357	£0	£49,784,933	£0	£494,877	£821,097	£5,080,800	£1,606,166	£0	£949,887	£0	£1,571,874	£0	£0	£0	£0
Energy interim	£7,528,534	£370,256	£370,256	£6,788,022	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
Sale West Link Road	£7,301,328	£3,042,220		£2,129,554	£2,129,554														
Southern Link Road	£15,929,896	£1,401,831			£1,401,831	£5,033,847			£8,092,387										
Red Brook Bridge (Southern Link Road)	£3,968,000					£3,968,000													
Eastern Link Road	£18,498,986							£6,710,417	£6,710,417	£5,078,153									
Greenway Bridge (Eastern Link Road)	£2,523,400								£2,523,400										
Off site junction improvements	£1,611,822						£805,911	£805,911											
Existing footpath improvements	£2,782,021	£198,716	£198,716	£198,716	£198,716	£198,716	£198,716	£198,716	£198,716	£198,716	£198,716	£198,716	£198,716	£198,716	£198,716				
Existing rides improvements	£2,818,982	£201,356	£201,356	£201,356	£201,356	£201,356	£201,356	£201,356	£201,356	£201,356	£201,356	£201,356	£201,356	£201,356	£201,356				
Active Travel Links	£15,225,235	£4,993,175	£596,724	£596,724	£3,071,373	£596,724	£596,724	£596,724	£596,724	£596,724	£596,724	£596,724	£596,724	£596,724	£596,724				
AT2 Bridge (Greenway)	£3,552,122										£3,552,122								
Public Transport Contributions (bus services)	£20,625,000			£1,650,000	£1,650,000	£1,650,000	£1,650,000	£1,650,000	£2,475,000	£2,475,000	£2,475,000	£2,475,000	£2,475,000						
Social Infra - Education	£87,999,956	£3,847,125	£2,951,882	£4,476,214	£6,774,811	£7,137,747	£7,016,769	£7,137,747	£7,379,705	£7,403,901	£8,952,429	£6,799,007	£5,879,568	£5,226,283	£4,839,151	£1,935,660	£241,958		
Social Infra - Healthcare	£7,251,000	£240,445	£184,493	£279,764	£423,426	£446,109	£438,548	£446,109	£461,232	£462,744	£559,527	£424,938	£367,473	£326,643	£302,447	£120,979	£15,122		
		£35,894,802	£54,260,099	£46,049,957	£18,814,700	£89,469,826	£13,960,346	£21,220,734	£34,815,660	£25,884,112	£35,146,328	£13,674,618	£13,687,268	£6,549,721	£10,995,397	£2,056,639	£257,080	£0	£0

	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34	2034/35	2035/3	2036/3	2037/3	2038/3	2039/4	2040/4	2041/4	2042/43
SUDS	Costs are spread across lifetime of development based on SUDS being introduced at start of each plot development																	
Foul Water	Initial pumping station costs to deliver early plots (spread over three years to reflect time for delivery)				Further pumping station cost for further development (PR4B, PR3G etc)					Further pumping station cost for further development (PR3B, PR4E, PR4C)								
Electric	Costs for network and distribution substations spread across lifetime of development	Commercial development will trigger provision of Grid Supply Point and Primary Substation																
Potable Water	Costs spread across lifetime of development as networks will extend in line with plots being developed																	
Energy final	Costs for distribution network and pipework spread across lifetime of development				Final energy centre construction (allowing period for design and approval)													
Energy interim			Interim energy centre construction (allowing period for design and approval)															
Sale West Link Road (SWLR)	Initial sections from north and south through initial portions of SR2A		Full completion through centre portions of SR2A															
Southern Link Road (SLR)	Initial section to access PR3C			Further section beyond PR3C to PR3D	Further section up to PR4B			Full completion to connect into ELR										
Red Brook Bridge (Southern Link Road))SLR)					Bridge required for construction beyond PR3D													
Eastern Link Road (ELR)							Initial section from CRR to access CE2C & CE3A	Further section to additional portions of CE3A	Completion of route beyond CE3A beyond Greenway crossing to SLR									
Greenway Bridge (Eastern Link Road)								Construction of bridge required to connect ELR and SLR										
Off site junction improvements						Assumed trigger - subject to traffic modelling as part of individual applications	Assumed trigger - subject to traffic modelling as part of individual applications											
Existing footpath improvements	Costs spread across lifetime of development to reflect build out schedule																	
Existing rides improvements	Costs spread across lifetime of development to reflect build out schedule																	
Active Travel Links	AT2 scheme brought forward early to encourage active travel use from initial occupation			AT6 scheme allows for delivery of PR3D														
AT2 Bridge (Greenway)										Provides access over MSC to Cadishead. Programmed later to allow for complexity of delivery.								
Public Transport Contributions (bus services)			Initial contribution (spread over 5 years) based on interim PT solution					Further contribution (spread over 5 years) based on final PT solution										
Social Infra - Education	Partington: Expand existing Partington primary schools to achieve additional 3 FE, initial engagement of relevant bodies taken place; AND Sale West Parcel: Utilise existing projected surplus of 2.98 FE across Sale West planning area to fully meet additional demand.					Sale West: Contribution required to Firs Primary expansion which was forward funded from basic need, further 1 FE available to open once other surplus used AND Secondary - Expand Broadoak School by 2 FE - feasibility study commissioned. More scope on this site for further expansion if required in future. AND Expand North Cestrian School in Altrincham by 2 FE - feasibility study commissioned.				Potential for new 2-3FE school at site of former Moss View School AND Land bank for 5-6FE new secondary school, keep under review							
Social Infra - Healthcare	Costs spread across lifetime of development to reflect build out schedule																	