

Contents

Technical Annex 19A	Baseline energy consumption and emissions	9
A.1	Baseline – Site South of Cherryfield Drive	9
A.1.1	Baseline energy consumption	9
A.1.2	Baseline CO ₂ emissions	10
A.2	Baseline – Site North of Cherryfield Drive	11
A.3	Baseline – Whole Site	13
Technical Annex 19B	Unmitigated scheme energy consumption & carbon dioxide emissions	15
B.1	Building areas and uses	15
B.2	Energy Benchmarks	15
B.3	Unmitigated energy consumption and CO ₂ emissions – Site south of Cherryfield Drive	17
B.4	Unmitigated energy consumption and CO ₂ emissions – Site North of Cherryfield Drive	18
B.5	Unmitigated energy consumption and CO ₂ emissions – Whole site	19
B.5.1	Conclusions	20
Technical Annex 19C	Mitigated scheme energy consumption & carbon dioxide emissions	21
C.1	Summary of Energy Policy	21
C.1.1	Knowsley Metropolitan Borough Council	21
C.1.2	Unconfirmed Requirement for Code for Sustainable Homes (CSH) Level 3	21
C.2	Renewable Energy Targets	22
C.3	Combined Heat and Power	22
C.4	Options for meeting 10% renewables obligation	23
C.4.1	Ground Source Heat Pump (GSHP)	23
C.4.2	Biomass Heat	24

Technical Annex 19D	Passive energy consumption reduction measures	25
D.1	Improve Building Fabrics and Glazing	25
D.2	Improve Air Tightness	25
D.3	Natural Lighting	26
D.4	Natural Ventilation	27
Technical Annex 19E	Evaluation of energy efficiency measures	29
E.1	Intelligent Control Systems	29
E.2	Low Energy Lighting	30
E.3	Lighting Control Systems	30
E.4	Demand Driven Ventilation	31
E.5	Heat Recovery Systems	31
E.6	High efficiency plant and small power equipment	32
E.7	Energy Monitoring	33
E.8	District Heating	33
E.9	Combined Heat and Power (CHP)	34
Technical Annex 19F	Evaluation of renewable technologies	37
F.1	Wind	37
F.2	Solar Photovoltaics (PV)	39
F.3	Solar Hot Water Heating	40
F.4	Biomass	41
F.5	Biomass CHP	42
F.6	Ground Source Heat Pumps	43
F.7	Energy from Waste	45
Technical Annex 19G	Energy Strategy Consultation	47
Technical Annex 19H	References	49