

Appendix 4

Waltham Forest Town Hall Campus and Willow House redevelopment Matrix to Assess Climate Change Impacts

| Aim is to reduce Carbon Emissions (CO2) by 80% by 2050 | Positive impact | Negative impact | Mitigation measure | Effect on CO2 emissions (+ or - tonnes of CO2) | Opportunity to promote |
|--|--|--|--|--|---|
| Water Water Use and Flooding | The scheme will provide on-site attenuation of surface water run-off to lower the risk of flooding and potential damage to the site. This will be achieved using a range of measures to regulate the site drainage rates. Green roofs are proposed across the site and will provide attenuation capacity for building water catchment areas. This will reduce the stress on local drainage networks. | Increased housing numbers resulting in increased water usage. Water use during construction. | Water conservation and surface drainage measures as required by Building Regulations. Require water conservation measures during construction. | Increase in CO2 emissions (from energy used to supply water – treatment and pumping); not measured/quantified at this stage. | Design new homes to maximise water conservation and minimise flood risks. Facilitate and encourage use of water conservation measures and facilities by residents, such as rain water capture and storage for garden use. |
| Energy Energy efficiency and energy saving in buildings, including | On-site CO2 emission improvements include: Energy demand | Increased housing numbers resulting in increase in energy use. Energy use during | A ‘fabric first’ approach by focusing primarily on reducing energy consumption and CO2 emissions | Increase in CO2 emissions (from energy used by new homes and in constructing new homes); not | Reduce energy use in construction – maximise use of recycled materials. Promote additional energy conservation measures e.g. |

| Aim is to reduce Carbon Emissions (CO2) by 80% by 2050 | Positive impact | Negative impact | Mitigation measure | Effect on CO2 emissions (+ or - tonnes of CO2) | Opportunity to promote |
|---|--|---|---|---|---|
| opportunities for installation of renewable energy generation | efficiency – Low carbon heat – Renewable generation (PV) | construction. | through passive design measures, such as, improving the performance of the building fabric and incorporating energy efficiency measures. The planning policies for 10%-15% reduction at the be lean stage for resi/non resi. There will be a 35% overall on site reduction at least, with any remainder to zero carbon offset. | measured/quantified at this stage. | – LED lights, timers etc. |
| Air Air quality, pollution | Design solutions to ensure air quality is satisfactory could include green infrastructure. Car-free development except for disabled units; provision of cycle stores and safe cycle routes. Energy efficient dwellings reduce pollution from space | Increased housing and commercial space resulting in increase in pollution and heating, vehicle use and waste. Pollution from construction activities. | Bike storage facilities to encourage cycling. Mitigate pollution from construction by requiring contractor to reduce waste, reduce vehicle journeys, use less polluting vehicles, etc. Strategy will | Increase in CO2 emissions (from increased number of vehicle journeys by new residents and in constructing new homes and commercial space, from domestic, non-domestic and construction waste); not measured/quantified at this stage. | Pollution mitigation measures including pollution capturing plants. Construction pollution reduction measures including using low emission vehicles. Sustainable transport plans, particularly cycling (Enjoy Waltham Forest project). Recycling household waste. |

| Aim is to reduce Carbon Emissions (CO2) by 80% by 2050 | Positive impact | Negative impact | Mitigation measure | Effect on CO2 emissions (+ or - tonnes of CO2) | Opportunity to promote |
|--|---|--|--|--|---|
| | heating gas boilers. | | incorporate low and zero carbon technologies. The technologies will include heat pumps to use electricity to generate low carbon heat and minimise the combustion of fossil fuels such as natural gas – reducing climate impact and providing a better local air quality solution. Solar energy technologies such as PV to generate power on site will be installed across both sites where suitable. This solution will help to locally offset a proportion of the remaining annual CO ₂ emissions anticipated from the development. | | |
| Waste – reducing, reusing and recycling waste | Facilitate domestic and non-domestic recycling by providing dedicated | Increased housing and commercial space resulting in increase in domestic | Encourage recycling by providing dedicated recycling facilities. | Increase in CO ₂ emissions (from increased domestic, non-domestic and | Design homes to maximise the use of recycled materials and reduce waste during construction (e.g. |

| Aim is to reduce Carbon Emissions (CO2) by 80% by 2050 | Positive impact | Negative impact | Mitigation measure | Effect on CO2 emissions (+ or - tonnes of CO2) | Opportunity to promote |
|---|---|---|---|---|--|
| | recycling bin stores. | and non-domestic waste. Waste during construction process. | Mitigate waste from construction by requiring contractor to reduce waste and recycle. Use recycled construction materials, where possible. | construction waste); not measured/quantified at this stage. | off-site manufacturing). Savings from reducing construction waste. |
| Land Use of brown-field and green-field sites | Retain as many trees as possible and replace any lost at 5:1 rate; public amenity space and external play areas. Landscaped improvements to the front lawns, fountain area, northern space in Town Hall, and Chestnut's Field | No development is proposed on existing green-field sites | Design requirement to enhance environment and provide green spaces. | Increased planting will help reduce CO2; not measured/quantified at this stage. | Measures to increase bio-diversity – 'green' roofs and walls, roof gardens, cleverly designed landscaping. |
| Bio-diversity Effects on bio-diversity including green space, trees, rivers and streams | Bio-diversity measures as required Council Planning Policy. | Potential for loss of self-seeded plants and some mature trees and supported fauna. | provide high quality green spaces to enhance the ecological value of the site by means of habitat creation and increasing surface water attenuation, which will reduce the risk of ecosystem damage through | Increased planting will help reduce CO2; not measured/quantified at this stage. | Measures to increase bio-diversity – 'green' roofs and walls, roof gardens, landscaping designed to improve and enhance bio-diversity. |

| Aim is to reduce Carbon Emissions (CO2) by 80% by 2050 | Positive impact | Negative impact | Mitigation measure | Effect on CO2 emissions (+ or - tonnes of CO2) | Opportunity to promote |
|--|-----------------|-----------------|---|--|------------------------|
| | | | <p>flooding events.</p> <p>Landscaping proposals will involve the input from ecologists and incorporate a planting mix designed to provide high levels of ecological value on the site and promote native species. In particular the plans aim to make use of the natural features on the site.</p> <p>The masterplan will recognise and address the results of local ecological surveys. Construction will be managed to ensure minimal ecological impact.</p> | | |

| Aim is to reduce Carbon Emissions (CO2) by 80% by 2050 | Positive impact | Negative impact | Mitigation measure | Effect on CO2 emissions (+ or - tonnes of CO2) | Opportunity to promote |
|--|---|---|--|--|--|
| <p>Transport Travelling to deliver service. Discouraging car use and encouraging walking, cycling and use of public transport</p> | <p>Meet Local Plan requirements for reduced car parking. Car-free development except for disabled units provision of cycling facilities and safe cycle routes; other sustainable transport obligations and requirements</p> | <p>Increased housing and commercial space resulting in increase in vehicle journeys by and to residents and commercial (e.g. deliveries, visitors). Construction traffic.</p> | <p>Cycling will be encouraged further through the provision of high levels of secure and accessible cycle parking facilities. Facilities for home working will also be installed within each dwelling to enable residents to reduce travelling to work.</p> <p>Electric vehicle charging points will be provided encouraging the uptake of low emission vehicles lowering transport CO2 emissions and improving the local air quality.</p> | <p>Increase in CO2 emissions (during construction); not measured/quantified at this stage.</p> | <p>Low emission vehicles (EVs) charging points, cycling (link to Enjoy Waltham Forest). Continuation of car clubs. Local sourcing to reduce distances travelled, improve delivery scheduling to reduce number of vehicle journeys, use of low emission vehicles.</p> |

Commentary on any differences in financial costings for climate change mitigation / adaptation measures including energy efficiency and potential external grant sources

Dynamic overheating modelling will be undertaken early within the design process to guide the proposals and reduce the risk of overheating. Potential ventilation restrictions due to local noise or air quality will be investigated. See Appendix C for further detail.

The scheme will provide on-site attenuation of surface water run-off to lower the risk of flooding and potential damage to the site. This will be achieved using a range of measures to regulate the site drainage rates. Green roofs are proposed across the site and will provide attenuation capacity for building water catchment areas. This will reduce the stress on local drainage networks.

Potential “whole life costing” savings ie: increased installation costs will achieve running cost savings over lifetime; including reduced use of resources eg: water saving devices

Whole Life Carbon assessment to show life cycle emissions have been reduced. Currently no target but would involve additional study as part of planning application. To be assessed and quantified at the detailed technical design stage.

Explanation of Proposal chosen in context of results matrix assessment, including what mitigating steps can and have been taken

Mitigation measures as shown for each sustainability sector above will be progressed in the design specification process to minimise the impact of the development.

Total Tonnes of CO2 & DEC rating of building to be occupied:

Rating not available at this stage as detailed technical design work has not yet been undertaken.