

Figure 12: Heat demand map - Proposed development 2026

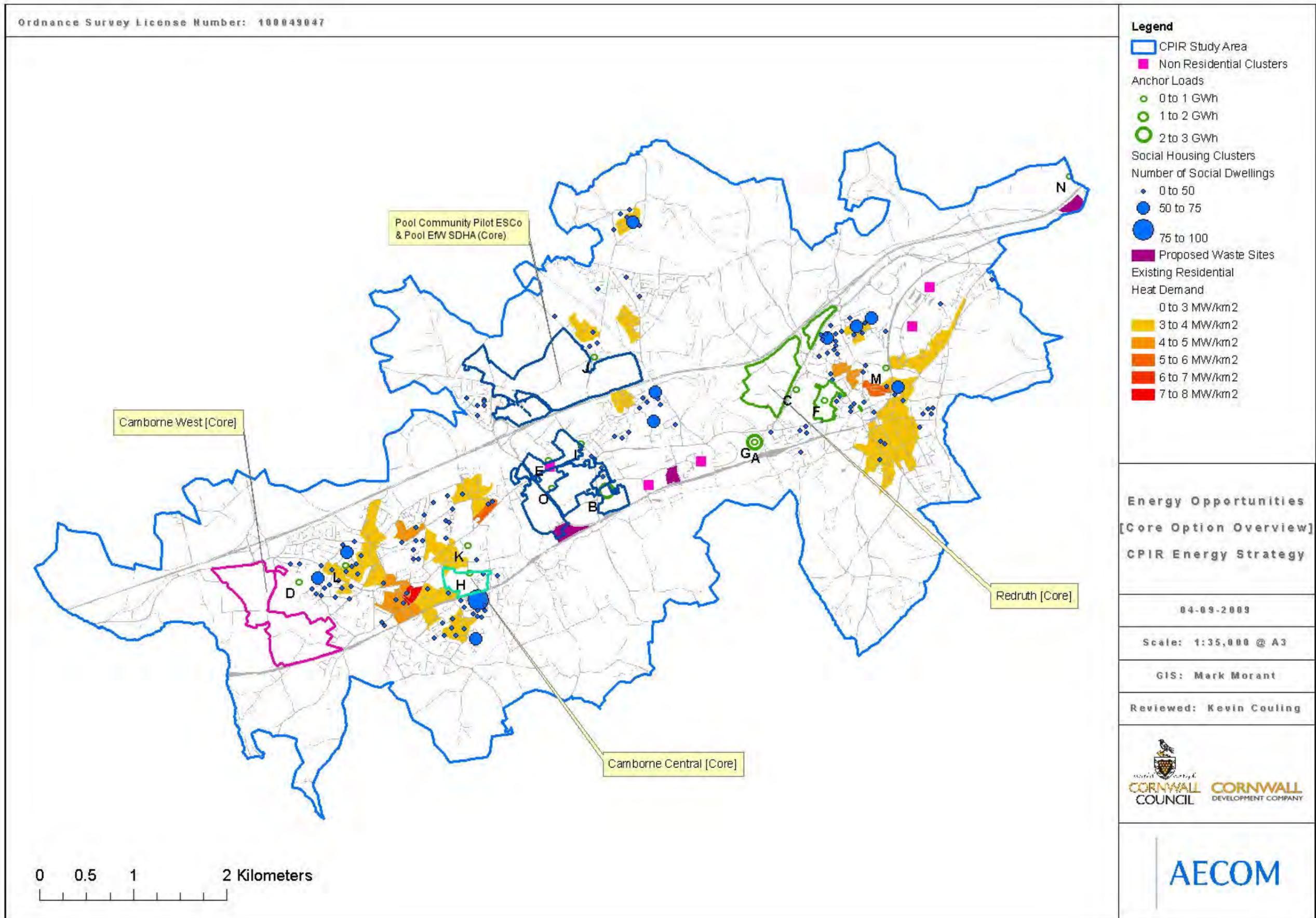


Figure 13: Energy Opportunities: Core Options Overview

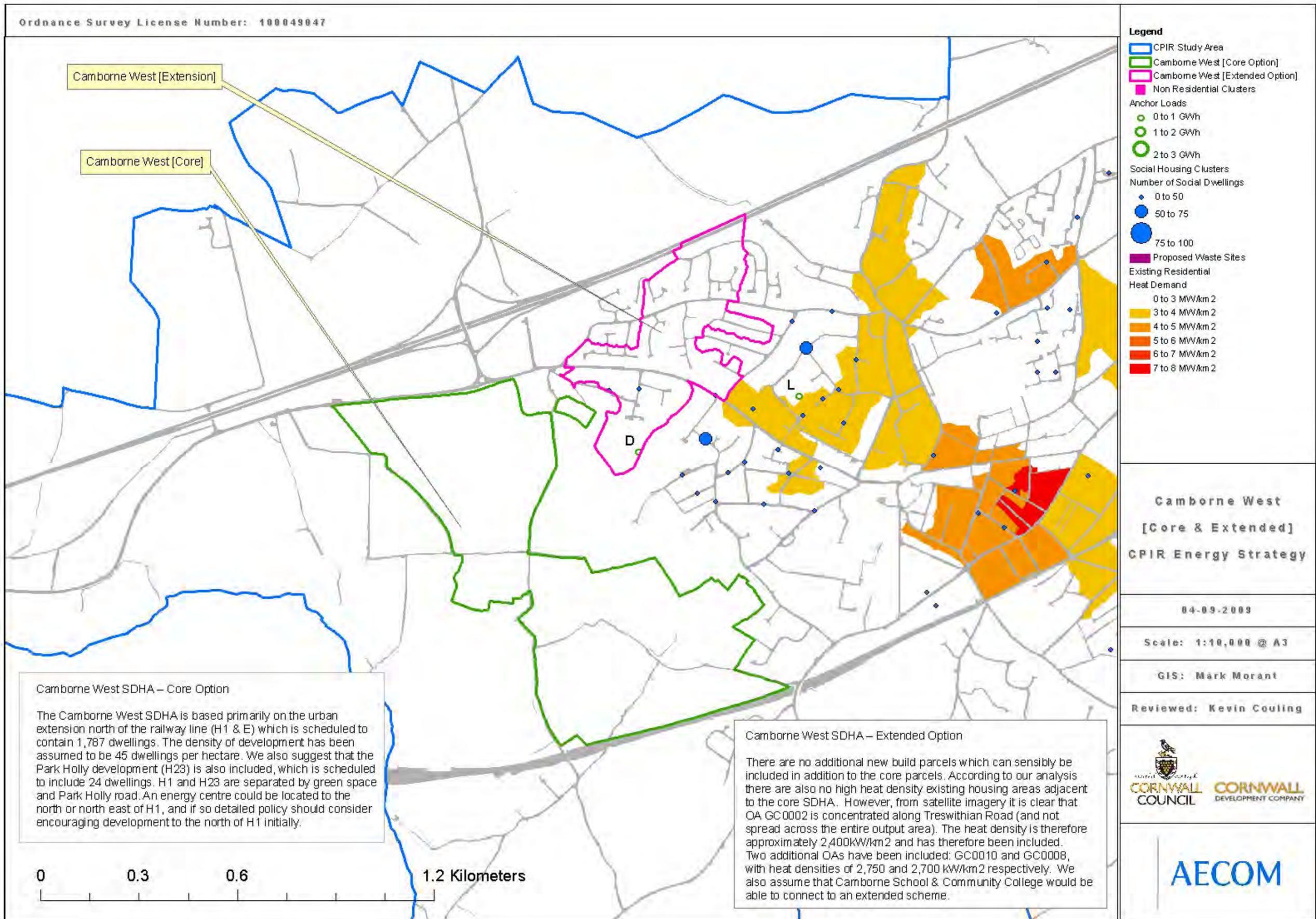


Figure 14: Camborne West SDHA

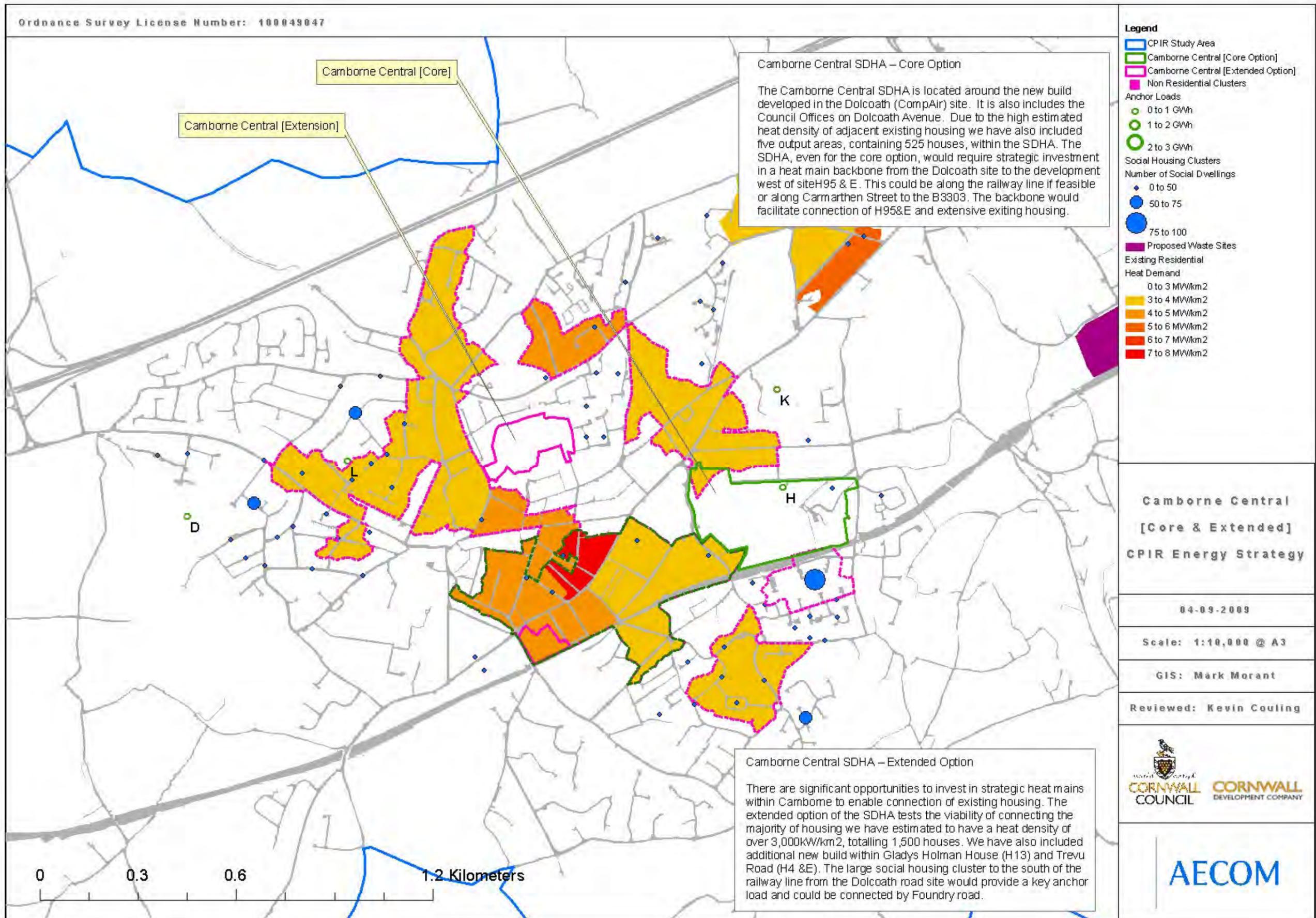


Figure 15: Camborne Central SDHA

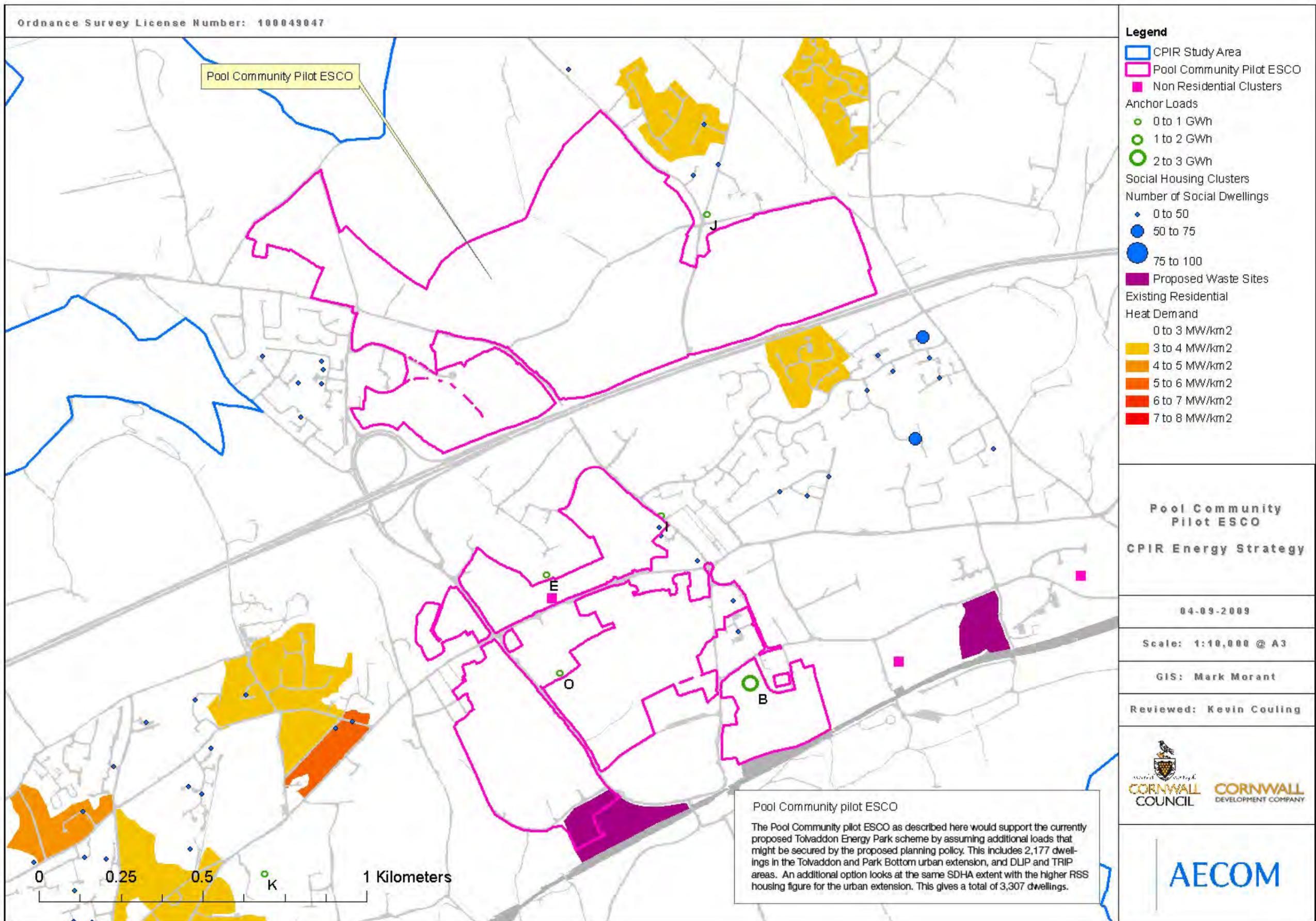


Figure 16: Pool Community Pilot ESCo

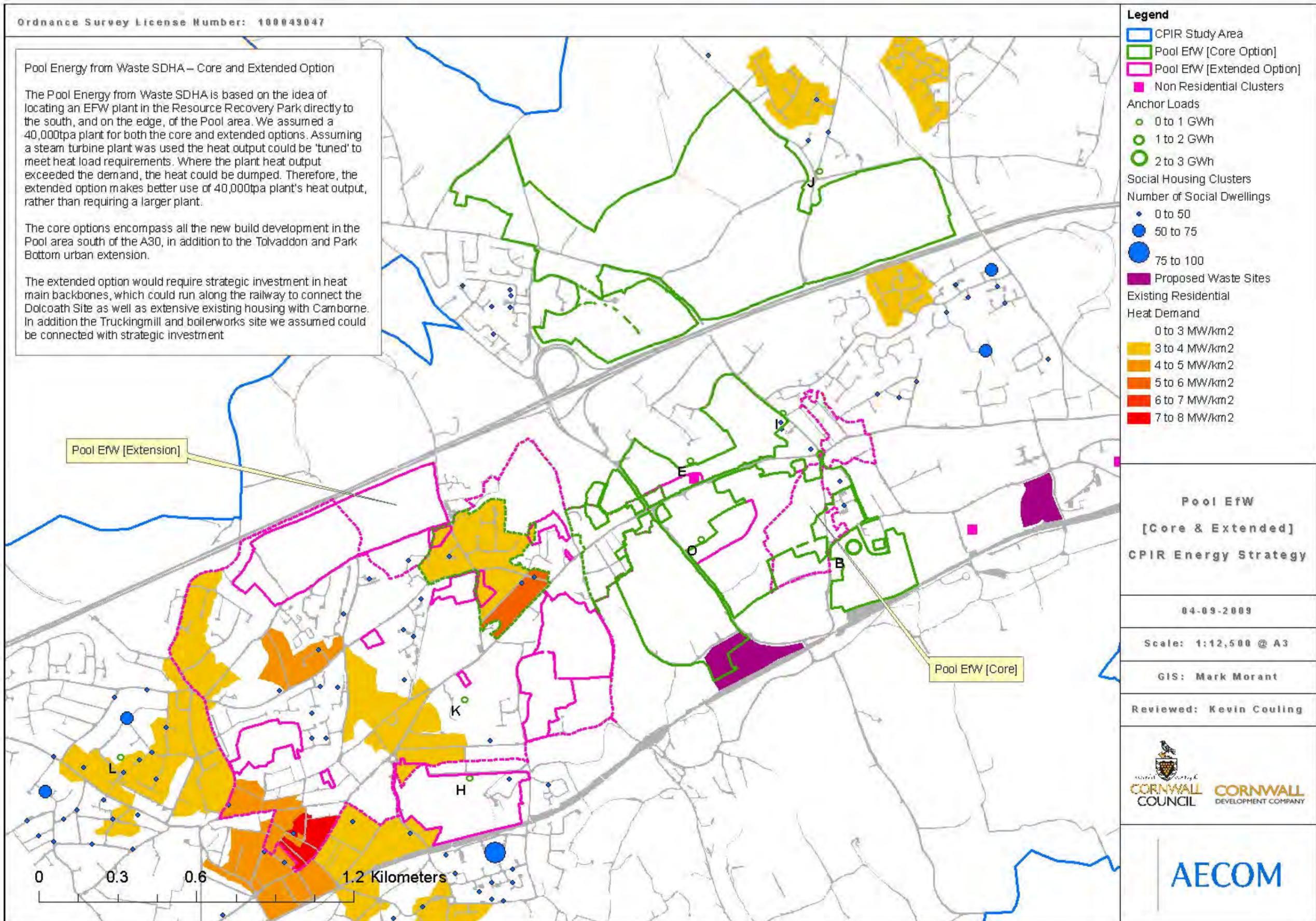


Figure 17: Pool Energy from Waste SDHA

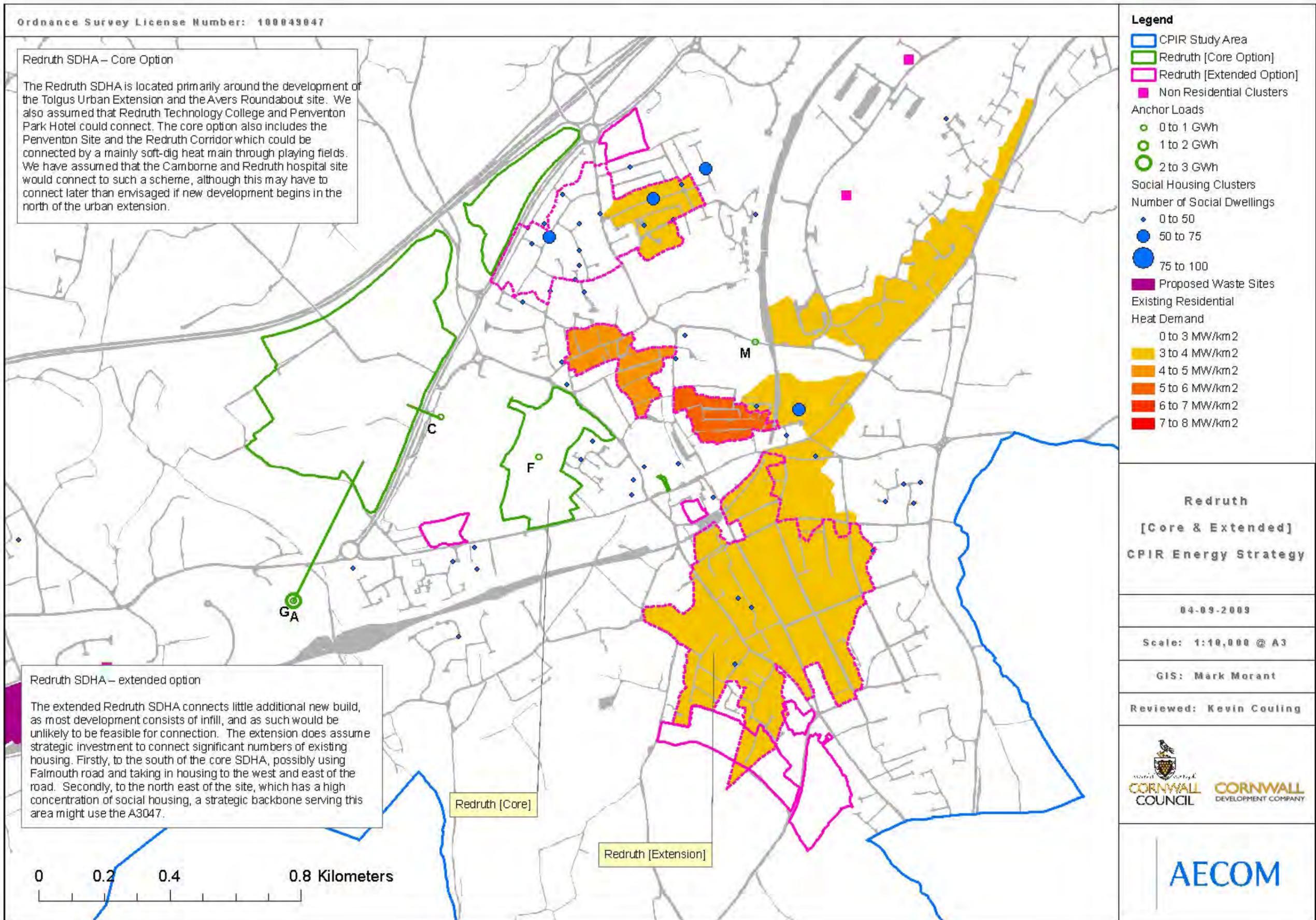


Figure 18: Redruth SDHA

4.4 Wind mapping

The wind constraints assessment for CPIR used a GIS mapping tool to provide up-to-date information on the spatial relationship between potential sites for large scale wind energy developments (circa 1 and 2 MW wind turbines) and constraints which may restrict such developments.

The assessment identified the following geographic constraints: residential property; transport infrastructure; environmental and cultural heritage; and telecommunication links. Once identified, each of the above constraints were then removed from the study area to leave unconstrained, potential sites for large scale wind energy development(s). Following the initial filter of potential sites, a second filter was undertaken based on topographic constraints and average annual wind speed.

A summary of how each of these constraints was addressed is given below.

A comprehensive list of all the GIS datasets used in the assessment are given in Appendix 3.

4.5 Existing constraints

Wind constraints study area

The wind constraint study area was defined by the geographic extent of the following wards: Camborne North; Camborne South; Camborne West; Illogan North; Illogan South; Redruth North; and Redruth South.

The Ordnance Survey MasterMap layer for the CPIR study area did not extend to the full geographic extent of the wind constraint study area. To compensate for this lack of available data the wind constraints study area was manually reduced along the southern edge to within 400m of the edge of the MasterMap tile.

To guarantee capturing all constraints within the wind constraints study area the assessment zone was extended by 400m. 400m represented the largest buffer distance associated with the potential noise impact to residential properties (see below).

Noise and residential amenity

Residents of dwellings in close proximity to wind turbines may potentially be affected by mechanical and aerodynamic noise from wind turbines. There are established guidelines as to the maximum acceptable noise levels to prevent any undue impact on residential amenity²¹. For individual sites, the potential noise impacts on nearby residential properties would be modelled in detail, using industry software. However, for this level of strategic assessment, it is appropriate to use a “rule of thumb” for a minimum separation distance from dwellings. We have assumed a separation buffer of 400m, based on the use of wind turbines in the range of 0.85-1.3MW²². These turbines are at the smaller end of those currently being used for commercial wind farms, but we chose this size as we were mainly focussed on opportunities for single or small clusters of turbines in relatively close proximity to the CPIR area. If larger turbines than this were to be used, a larger buffer is likely to be needed.

The Local Land and Property Gazetteer (LLPG) was used to identify all existing residential properties within the study area. Proposed housing, and proposed mixed development parcels are identified within the proposed development parcels.

Transport infrastructure

The PPS 22 companion guide states that “Although a wind turbine erected in accordance with best engineering practice should be a stable structure, it may be advisable to achieve a set-back from

roads and railways of at least fall over distance, so as to achieve maximum safety.” For non-trunk roads we have assumed a separation distance of topple distance plus 10% which is slightly more conservative than PPS 22.

For the purpose of this study, the hub height and rotor diameter were considered to be 65m and 52m respectively²³, giving a topple distance of 91m. Adding on 10%, this gives a separation buffer of 100m from non-trunk roads, which we used for the analysis.

The Highways Agency has provided specific guidance in relation to the location of wind turbines close to trunk roads and motorways. This suggests a buffer distance of topple height plus 50m²⁴. We have followed this guidance and assumed a buffer distance from the A30 of 141m.

We are not aware of any specific guidance from Network Rail in relation to separation distance from railways, but we have assumed it to be the same as that for trunk roads, i.e. 141m.

The location of all transport infrastructure has been derived from Ordnance Survey MasterMap.

Environmental and cultural heritage

Existing environmental and cultural heritage features were identified as area of constraint and included: Sites of Special Scientific Interest, Local Nature Reserves, Special Protection Areas, Areas of Outstanding Natural Beauty, archaeological sites which included listed buildings, and conservation areas.

No buffers were established surrounding the above constraints.

Aviation, radar and telecommunication links

The location of existing telecommunication masts was identified by Cornwall Council and a 100m ‘topple distance’ buffer was included in the constraints dataset.

Potential interference with National Air Traffic Service (NATS) en route radar for civilian aircraft was assessed using the NATS GIS dataset²⁵. There were no NATS restricted zones within the wind constraints study area.

There are no known operating civilian or military airports or aerodromes within 5km of the study area. The nearest are the military airfield at Culdrose and the aerodrome at Truro²⁶. However, there is still the potential for interference with the radar at Culdrose (and other possible military radar that may be present in the area) that could only be assessed through consultation with the MoD as part of a more detailed assessment of specific sites.

Any potential interference with point-to-point radio telecommunications links (e.g. as used by mobile phone operators) can only be assessed through consultation with Ofcom and relevant operators as part of a more detailed assessment of specific sites.

Topographic and wind speed constraints

Following the initial filter, 11 potential sites were identified for wind energy development. A second filter was then undertaken based on topographic constraints and average annual wind speed.

Topographical constraints including the gradient of underlying land and proximity to woodland provided a second level filter. The second level filter was undertaken visually using Ordnance Survey 1:50,000 raster imagery to identify constraints.

The average annual wind speed (AAWS) was derived from the BERR wind speed database (www.berr.gov.uk). In the current market, wind developers will typically look for sites with an AAWS of no less than 6 m/s at 45m above ground level, and ideally over 6.5m/s.

²¹ See para. 22 of Planning Policy Statement 22 (PPS 22) and the PPS 22 Companion Guide, p.169

²² There is no standard published guidance on what figure to use, but this is a typical figure used for such assessments, for turbines of this size, based on experience with meeting the noise guidelines. The figure of 400m (for 1.3MW turbines) was used for the wind assessment for REVision 2010 which provided the evidence base for the Cornwall County renewable electricity target for 2010 (see annex 4 of final report, at <http://www.oursouthwest.com/revision2010/5-annexes1-7.pdf>)

²³ Based on a Vestas v52, 0.85MW wind turbine

²⁴ See http://www.highways.gov.uk/business/documents/Wind_Turbines_SP_12-09.pdf

²⁵ See <http://www.bwea.com/aviation/nats.html>

²⁶ From reviewing the South West Renewable Energy Atlas DVD, available from Government Office for the South West

4.6 Constraints not considered

The following constraints have not been considered as part of this analysis:

- Feasibility of grid connection
- Potential impacts on birds and bats and other ecology
- Impact on telecommunications, or military or civilian radar
- Shadow flicker
- Visual impact and landscape sensitivity

These constraints and issues can only be considered as part of a more detailed analysis for specific sites and through consultation with statutory consultees such as the MoD and Ofcom.

4.7 Key outcomes

The analysis showed that, based on the assumptions used, there were a total of 11 unconstrained areas. These areas are labelled A-K on the map on the next page. All of these sites have an annual average wind speed over 6.5 m/s at 45m above ground level. Only two of these are directly within the CPIR action plan area (sites B and C), and are small sites, and the remainder are outside of, but in close proximity to, the study area. The main constraints within the CPIR area are due to the separation distances required from roads, the railway and existing dwellings. Removing the buffers around any new build development parcels did not show up any additional unconstrained areas.

Each of these 11 sites was then considered in more detail in relation to the underlying OS base, to assess whether the site appeared suitable. Based on this assessment, sites B, D and G and H appear unsuitable. This is because:

- Site B is sitting in a valley and therefore the wind resource is unlikely to be suitable
- Site G is in very close proximity to a telecommunications mast
- Site D, near Troon, is in close proximity to woodland and open water and what may be a nature reserve. This may mean a poor wind resource, as well as potential issues in relation to birds and bats
- Site H is also close to woodland and is also a long way from any potential access

Sites A, E and F, and I, J and K appear to be the most promising. Site A is near Roseworthy, on the north western edge of the old Kerrier district. It has a good south west facing slope, which is beneficial for wind flow. It is also close to an access road and a possible point for grid connection. Sites I, J and K are all located at the disused military airfield at RAF Portreath. However, there is known to be a remote radar system at Portreath, which is monitoring the South Western air approaches to the UK, as part of the UK air defence system²⁷. This may preclude any potential for wind turbines at the site.

Sites E and F are just east of Troon and they are situated above westerly slopes and are close to potential access tracks.

The remaining site C, is in the grounds of the Duchy college at Rosewarne. However, an aerial view of the site suggests that the site is largely covered with polytunnels and other buildings that may make locating a turbine difficult.

It should be noted that the radar station at Portreath, if active, may potentially rule out wind development at any of the sites identified. This will depend on whether a) turbines at any of the sites would be visible to the radar, which will depend on topography and b) whether the radar is scanning the Cornwall mainland or is only concerned with scanning the Atlantic, in which case it may not be an issue. It will probably only be possible to explore these issues in more detail through formal consultation with MoD.

²⁷ See http://en.wikipedia.org/wiki/RRH_Portreath

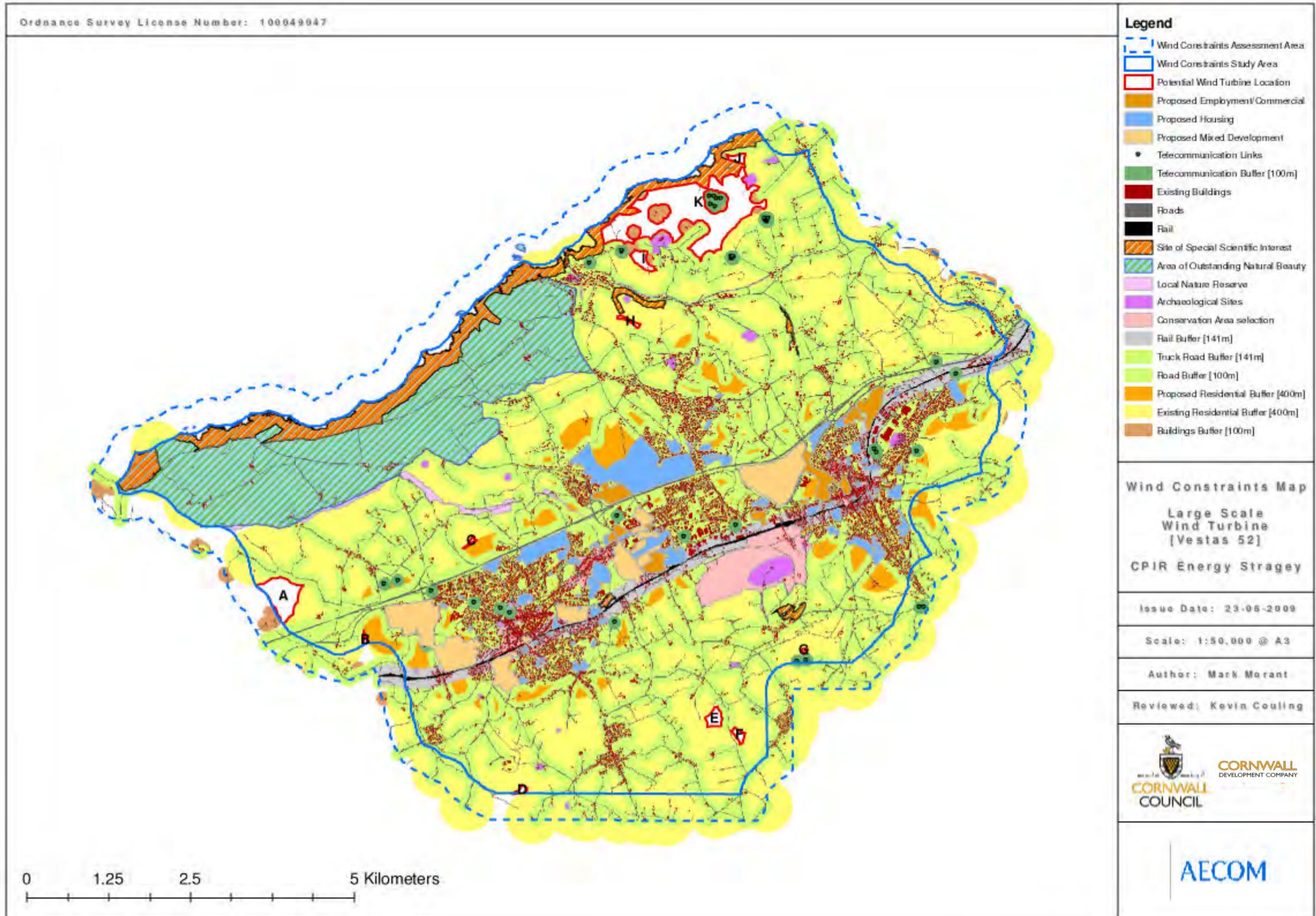
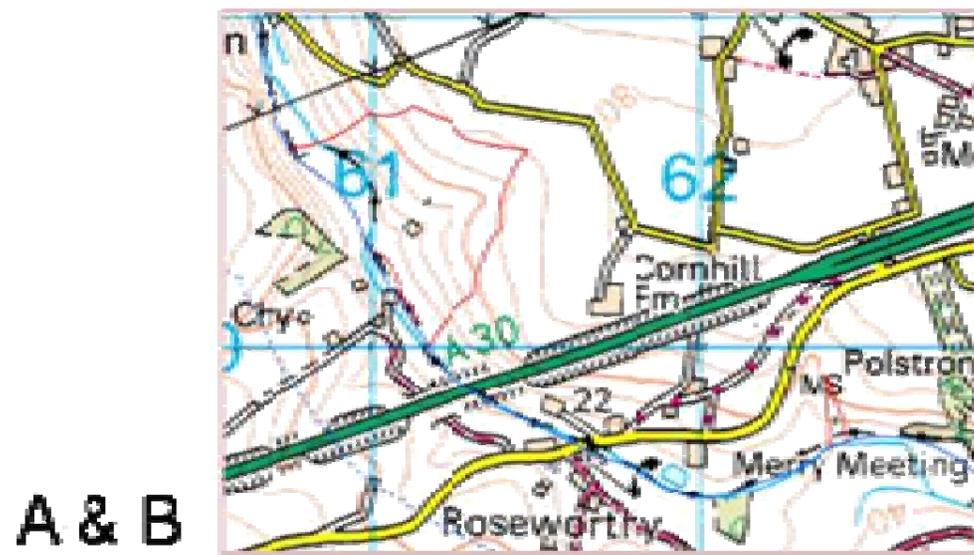


Figure 19: Wind Constraints Map



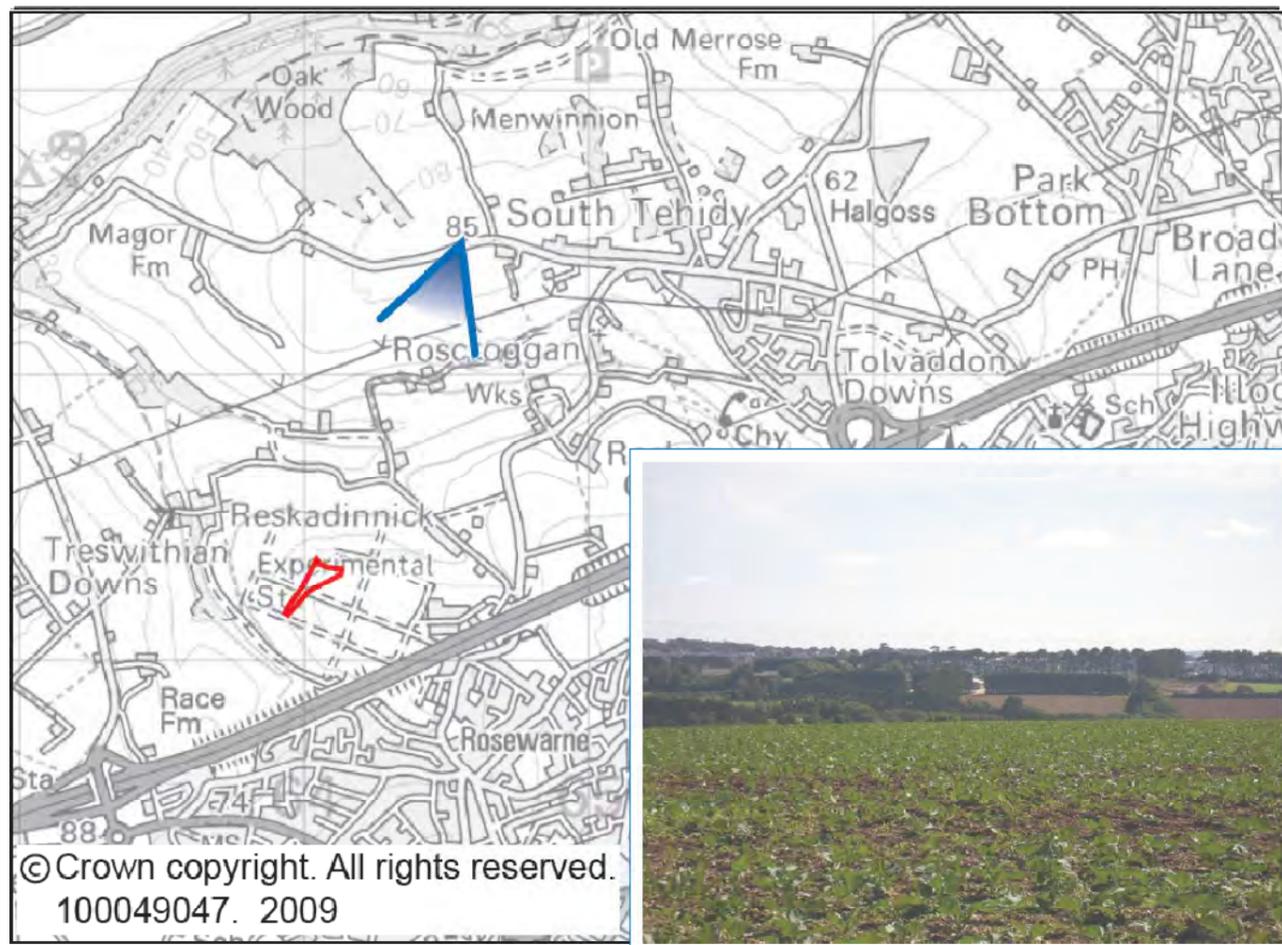
A & B

Figure 21: Wind sites A & B (B not photographed)



© Crown copyright. All rights reserved.
100049047. 2009

Figure 20: Wind site C



© Crown copyright. All rights reserved.
100049047. 2009



C