

DEVELOPMENT CONTROL COMMITTEE MEETING – 14 MARCH 2013

MEMBERS ADDITIONAL PAPERS -

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SPEAKING LIST

DEVELOPMENT CONTROL COMMITTEE – 11 APRIL 2013

SPEAKING REQUESTS:

APPLICATION NO.	TITLE	REQUESTS TO SPEAK IN OBJECTION	TIME ALLOCATED	RIGHT OF REPLY OR SPEAKERS IN FAVOUR	TIME ALLOCATED
12/00628/FUL	Land To The East of, Chaffron Way V1 To V2, Milton Keynes)	Cllr E Bald Ms A Taylor	Up to 3 Mins Up to 3 Mins	R. Cooke (Agent)	Up to 6 Mins
12/02551/FUL	Tesco Stores Ltd McConnell Dr. Wolverton	Mr L Lean	Up to 3 Mins	Mr R Robinson (Agent)	Up to 3 Mins

Application Number: 12/00628/FUL

Erection of electricity sub-station and associated access from H7 Chaffron Way

AT Land To The East of, Chaffron Way V1 To V2, Milton Keynes

FOR Western Power Distribution

Target: 11th May 2012

Ward: Emerson Valley

Parish: Shenley Brook End & Tattenhoe
PC

Report Author/Case Officer: James Kirkham

Contact Details: 01908 252039 james.kirkham@milton-keynes.gov.uk

Head of Team: Jackie Fox

Contact Details: Jackie.fox@milton-keynes.gov.uk

Please find attached additional information the applicant has been requested be circulated to members of the committee. The matters raised are covered in the Committee report.

Additional condition

Given the proximity of the site to the residential development it is recommended that the permitted development rights for the substation be removed to ensure that any future development within the substation can be controlled by the local planning authority taking the amenity of residents into account. It is therefore recommended that the additional following condition be added to the recommendation:

Pursuant to the Town and Country Planning General Permitted Development Order 1995 or any Statutory Instrument revoking or re-enacting that Order, the provisions of Article 3(1) and Class G of part 17 of Schedule 2 to the said Order (relating to Electricity undertakings) shall not apply to any dwelling to which this permission relates and no such development shall be carried out without the permission of the Local Planning Authority being first obtained.

Reason: To protect the amenity of the nearby residential properties.

Our Ref: WPD4200
Your Ref: 12/00628/FUL

5th April 2013

Mr James Kirkham
Planning Officer
Milton Keynes Council
Planning, Economy and Development
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Email: rjc@alliance-plan.co.uk

Dear James,

PLANNING APPLICATION REFERENCE 12/00628/FUL: ERECTION OF ELECTRICITY SUB-STATION AND ASSOCIATED ACCESS FROM H7 CHAFFRON WAY AT LAND TO THE EAST OF CHAFFRON WAY V1 TO V2 MILTON KEYNES

We refer to the above Planning Application and proposed substation at Tattenhoe in Milton Keynes.

The Application was referred to the March 2013 Development Control Committee with a recommendation for approval. Members resolved to defer a decision on procedural grounds so that members of the public could speak at the next Committee which is due to be held on the 11th April.

At the March Committee, there was some uncertainty amongst Members on the possible health and noise impacts of the proposed development. We feel that these matters are fully addressed in our submission and summarised in the Officer's Committee Report. We also note they are not referenced in the Committee Meeting minutes issued subsequently. We offered to meet Members and to give a briefing on these matters although the Committee Chair felt a short briefing note would be more beneficial.

In view of the above, we would like to highlight the following comments with regard to Electro Magnetic Fields (EMFs):

- The potential risk to health is taken seriously by the UK electricity industry and the industry is committed to following the guidance given by the Government on safe levels of exposure in the UK.
- The Government sets guidelines for exposure to EMFs on advice from the Health Protection Agency (HPA), and the 1998 International Commission on Non-Ionizing Radiation Protection (ICNIRP) guidelines have been adopted. Demonstrating a co-operative approach, a Code of Practice (February 2011) has been developed jointly by Government and the electricity industry to implement the ICNIRP policy, and set exposure limits.
- The Best Practice Guidance sets out all the practical details needed to apply the exposure limits. The Guidance requires the Energy Networks Association (ENA) to maintain a publicly available list on its website of equipment types of a design that is not capable of exceeding the ICNIRP thresholds, and which are therefore compliant with the Guidelines.

- The electricity industry designs all new equipment to comply with the Government's the thresholds. The ENA website (www.energynetworks.org) confirms that all substations that do not contain air-cored reactors produce fields that are below the exposure limit value set. The proposed substation does not contain an air cored component, and is therefore compliant with the 1998 ICNIRP Guidelines and UK Government Policy / Code of Practice.
- A copy of the Best Practice Guidance is enclosed, along with a copy of the relevant page of the ENA website. We would also refer Members to Section 3.2 of the Officer's Committee Report and to the Health Protection Authority consultation response at Section A3.9.

With reference to noise matters:

- The Applicant has been sensitive to potential noise impacts and commissioned a Noise Consultant to carry out studies of the proposed substation. This has directly led to the enclosing of the two transformers proposed, to ensure there is no adverse impact on the amenity of nearby properties from the transformers.
- The Noise Assessment confirms that with the acoustic enclosure in place, the 100 Hz tone produced by the transformer and its harmonics will not be above the minimum audible field detectable by the human ear. The transformers will not be audible at the nearest dwelling.
- Each transformer is to have an external cooling fan but this would only be used exceptionally. Fan operation will mostly be automatic and will occur only when a transformer is carrying additional loads as a result of a network emergency or during planned routine maintenance at this or other substations. Network emergencies cannot be predicted, but planned routine maintenance will be carried out once every six years. With the anticipated electrical load this substation is to supply, it is unlikely that the fans will operate under either eventuality for many years to come.
- The noise assessment shows that when the fans are in operation during the day, they will not be audible at the nearest residential dwelling above background noise levels. At night, the noise from the cooling fans may be audible at the nearest dwelling, but the noise inside the dwelling will not exceed World Health Organisation and BS standards. Even when both cooling fans are in use at night, the conditions within the bedrooms of the nearest residential property are likely to be between 25 and 30dBA and within the BS82333 range for "good" internal sleeping conditions within bedrooms.
- We would refer Members to Section 5.7 of the Committee Report, and note that the Council's Environmental Health Officer has been consulted and is satisfied with the proposed development.

We trust this summary is helpful and if you have any queries please get in touch.

Yours sincerely



Richard Cooke
Principal Planner



- **Exposure limits**
 - Limits in the USA
 - **Limits in the UK**
 - **Compliance of UK electricity networks**
 - Limits in Europe
 - Limits in specific countries
 - Limits from specific organisations
 - Compliance with limits
 - Static field limits
- Power lines and property
- Precaution
- SAGE
- Public opinion
- Communications
- Litigation
- UK Policy

Compliance of UK substations

This page is part of the process by which the UK electricity industry demonstrates compliance with EMF exposure limits for the general public - see full details.

Fields from substations are usually measured rather than calculated. Calculations are not usually feasible because of the complex geometry of the current paths within a substation.

The electricity industry has performed extensive measurements round existing substations at all voltages from the highest - 400 kV - to the lowest - 11 kV. Fields fall with distance, so the highest fields are found at the closest approach, at the perimeter fence or wall. Based on these measurements:

Large, outdoor, high-voltage substations

At the perimeter fence of an outdoor substation, the highest fields are invariably produced by overhead lines or underground cables entering the substation.

Away from these lines and cables, the field would normally be below 1 μ T.

Electric fields are extremely low because of the screening effect of the perimeter fence.

Smaller outdoor substations

Lower-voltage substations produce smaller fields.

Indoor substations

Modern designs of substation are such that, even when placed indoors, the largest fields are produced by the cables entering and leaving them.

Exceptionally, an older design of indoor substation can involve the "low voltage board" or the "transformer tails" being fastened to one of the exterior walls of the substation, and therefore producing an elevated magnetic field in the room on the other side of the wall (or ceiling). Even in these circumstances the fields remain compliant.

Substations containing air-cored reactors

There is one type of equipment - large air-cored reactors - that can produce higher magnetic fields. Air-cored reactors are found in, for example, Static Var Compensators (SVCs) and Manually Switched Capacitor banks (MSC). If these are located unusually close to the perimeter fence, the elevated field they produce may extend beyond the perimeter fence. The highest field known to have occurred in such circumstances is less than 20 μT . It is possible that fields could be as high as 100 μT though this has never been observed in practice. Although it is believed such fields would never exceed the public exposure limits, evidence of compliance with the limits will never the less be supplied on a case-by-case basis for installations including air-cored reactors, rather than generically as for all other substations.

Conclusion

All fields produced by substations are below the limit value of 360 μT . All present designs of substation are therefore compliant. If any radically different design were introduced, we will reassess this conclusion. For substations containing air-cored reactors, compliance will be demonstrated on a case-by-case basis.

See more information on fields from substations.

Power Lines: Demonstrating compliance with EMF public exposure guidelines

A voluntary Code of Practice

February 2011

About this voluntary Code of Practice

This Voluntary Code of Practice concerns situations where it is necessary to demonstrate compliance with the exposure guidelines that apply to public exposure to power frequency electric and magnetic fields (EMFs) in the UK.

Current Government policy on electric and magnetic fields (EMFs)^{1[1], 2[2]} is that power lines should comply with the 1998 ICNIRP Guidelines^{3[3]} on exposure to EMFs in the terms of the 1999 EU Recommendation^{4[4]}, and this Code of Practice implements this policy. As and when either ICNIRP issue new Guidelines or the EU revise the Recommendation, it will be for Government to consider those changes and to decide whether to adopt them or not. If Government policy changes, this Code of Practice will also be changed accordingly, but until that happens, the present policy as reflected in this Code of Practice remains in force.

This Code of Practice has been developed following publication of the Government response to the Stakeholder Advisory Group on extremely low frequency electric and magnetic fields (ELF EMFs)(SAGE) First Interim Assessment: Power Lines and Property, Wiring in Homes and Electrical Equipment in Homes, published in June 2007⁵. This Code of Practice has been agreed by the Department of Health, the Energy Networks Association, the Welsh Assembly, the Scottish Executive, and the Health and Safety Executive. It sets out what will be regarded as suitable evidence of compliance with these exposure guidelines as far as the electricity system is concerned.

There are further Government policies relating to EMFs from overhead power lines, specifically that as a precautionary measure they should, where reasonable, have optimum phasing. That is the subject of a companion Code of Practice "Optimum phasing of high voltage double-circuit power lines".

This Code of Practice applies in England, Wales, and Scotland.

What are the electricity industry and Government agreeing?

*The Electricity Industry*⁶ agrees that whenever evidence is required of compliance with EMF exposure limits, it will provide evidence according to this Code of Practice. *Government* agrees that such evidence will be regarded as sufficient to demonstrate compliance. Situations where the need for evidence of compliance with exposure limits may arise include applications

^{1[1]} Letter with ten-point annex from Parliamentary Under Secretary of State for Public Health to the Chairman of the National Radiological Protection Board, 22 July 2004

^{2[2]} "Government response to the Stakeholder Advisory Group on extremely low frequency electric and magnetic fields (ELF EMFs) (SAGE) recommendations.", Written Ministerial Statement 16 October 2009

^{3[3]} ICNIRP (1998). Guidelines for limiting exposure to time-varying electric, magnetic and electromagnetic fields (up to 300 GHz). Health Phys, 74(4), 494-522.

^{4[4]} COUNCIL RECOMMENDATION of 12 July 1999 on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz) (1999/519/EC)

⁵ SAGE First Interim Assessment <http://www.emfs.info/NR/rdonlyres/39CDF32F-E92B-4E2E-AD30-A2B006B8ED5/0/SAGEfirstinterimassessment.pdf>

⁶ This Code of Practice is agreed between Government and the Energy Networks Association (ENA). Formally, therefore, it binds only the member companies of ENA. However, Government and ENA hope that all network operators will follow these provisions.

for development consent for overhead power lines under the Planning Act 2008 and relevant planning legislation in Scotland and under Section 37 of the Electricity Act 1989, for compulsory purchase under schedule 3 to that Act, for necessary wayleaves under schedule 4 to that Act, and for planning permission for electricity equipment.

Direct and Indirect Effects

The Exposure Guidelines deal with both direct effects of fields on the body, primarily the induction of currents in the body, and indirect effects, such as microshocks, contact currents, and surface charge effects, which are all a consequence of charging and discharging of objects by the electric field.

Direct effects are protected against by quantitative exposure limits known as basic restrictions. The remainder of this Code of Practice details these quantitative limits and how they are applied.

While indirect effects are more tangible due to effects such as microshocks, they have historically given rise to less concerns than direct effects. For indirect effects, while the Guidelines give a cautionary reference level of 5 kV m^{-1} for the general public as a trigger to fuller assessment of compliance with the exposure guidelines, using that as a limit is not the most appropriate way of dealing with indirect effects. Rather, there is a suite of measures that may be called upon in particular situations, including provision of information, earthing, and screening, alongside limiting the field which should be used to reduce the risk to the public of indirect effects. In some situations, there may be no reasonable way of eliminating indirect effects, for instance where erecting screening would obstruct the intended use of the land. The approach to addressing indirect effects of electric fields will be the subject of a separate document to be developed between the industry and the Health Protection Agency.

What are the values of the public exposure limits?

The 1998 ICNIRP exposure guidelines specify a basic restriction for the public which is that the induced current density in the central nervous system should not exceed 2 mA m^{-2} . The Health Protection Agency specify⁷ that this induced current density equates to uniform unperturbed fields of $360 \text{ } \mu\text{T}$ for magnetic fields and 9.0 kV m^{-1} for electric fields. Where the field is not uniform, more detailed investigation is needed. Accordingly, these are the field levels with which overhead power lines (which produce essentially uniform fields near ground level) shall comply where necessary. For other equipment, such as underground cables, which produce non-uniform fields, the equivalent figures will never be lower but may be higher and will need establishing on a case-by-case basis in accordance with the procedures specified by HPA. Further explanation of basic restrictions, reference levels etc is given by the Health Protection Agency⁷.

Where do these limits apply?

Government policy is that the 1998 ICNIRP guidelines apply in the terms of the 1999 EU Recommendation. This specifies that Member States should:

⁷ "Application of ICNIRP Exposure Guidelines for 50 Hz Power Frequency Fields"

http://www.hpa.org.uk/webw/HPAweb&HPAwebStandard/HPAweb_C/1195733805036?p=1158934607693

“II. (b) implement measures according to this framework.....when the time of exposure is significant..... “

“III (c) may take into account criteria, where appropriate, such as duration of the exposure.....”

The preamble states:

“(9) This recommendationapplies, in particular, to relevant areas where members of the public spend significant time in relation to the effects covered by this recommendation;”

The Written Ministerial Statement of 16 October 2009 states (paragraph 42):

“... In this regard, the UK Government considers that exposure for potentially significant periods of time might reasonably be regarded as referring to residential properties, and to properties where members of the public spend an appreciable proportion of their time. ”

The clear steer from these statements is that there will be certain environments in which the public exposure is potentially for a significant period of time and where compliance with the ICNIRP general public guidelines will be required. In other environments, where exposure can be deemed not to be for a significant period of time, the ICNIRP occupational guidelines, rather than the ICNIRP general public guidelines, shall be deemed to apply.

In order to provide precision for the network companies, local planning officers and the public, in terms of assessing which guidelines apply it is appropriate to look across to any readily available tools in the planning system. All regions of the UK are covered in planning by a “Use Classes” regime which extends development control to changes in use of buildings or land. It would therefore be appropriate to draw on the classification used there to provide clarity.

The thrust of concern where public guidelines should apply is to residential uses. This would embrace use classes variously described as “dwellinghouses”, “houses”, “houses in multiple occupation” and “residential institutions”. It should sensibly be taken more broadly as also embracing other residential properties which may not fall within a particular use class e.g. flats or hostels. A less clear cut case exists for extending it to schools but given the health concern is very much orientated towards childhood sickness it would seem prudent to behave in a precautionary manner and include non-residential uses such as schools, crèches and day nurseries.

In each case, for practical application of the guidelines the definition should also be taken to include the curtilage of the building concerned.

When is specific evidence of compliance required?

The Energy Networks Association will maintain a publicly-available list on its website of types of equipment where the design is such that it is not capable of exceeding the ICNIRP exposure guidelines, with evidence as to why this is the case. Such types of equipment are likely to include:

-
- overhead power lines at voltages up to and including 132 kV
 - underground cables at voltages up to and including 132 kV
 - substations at and beyond the publicly accessible perimeter

Compliance with exposure guidelines for such equipment will be assumed unless evidence is brought to the contrary in specific cases.

For all other equipment (e.g. overhead power lines and underground cables at voltages of 275 kV and 400 kV), when evidence of compliance with exposure guidelines is needed, the following will be provided:

- A calculation or measurement of the maximum fields (ie directly under the line, or directly above the cable)

If this maximum value is less than the ICNIRP guideline levels, it may be assumed that all fields and exposures from that source will be compliant. If this maximum value exceeds the ICNIRP guideline levels, then it is also necessary to provide:

- A calculation or measurement of the field at the location of the closest property at which the public exposure guidelines apply

For overhead lines only, in addition:

- A statement as to compliance with the Code of Practice on phasing, including a justification in the terms of that Code of Practice if the line does not have optimum phasing.

What conditions is compliance assessed for?

Government policy is that the ICNIRP guidelines for the general public will be observed in areas where the land use is such that exposure might be for a significant period of time. Therefore, it is not appropriate to assess compliance for extreme, rare, or unlikely situations. Accordingly, for the purposes of compliance with Government policy, field levels will be assessed:

- For electric fields: for nominal voltage and, for overhead lines, design minimum clearance (excluding reduced clearances that occur only during exceptional ice loading);
- For magnetic fields: for the highest rating that can be applied continuously in an intact system (i.e. including ratings which apply only in cold weather, but not including short-term ratings or ratings which apply only for the duration of a fault elsewhere in the electricity system) and, for overhead lines, design minimum clearance;
- For both electric and magnetic fields: for 1 m above ground level on a plain, level surface;
- For both electric and magnetic fields: for the 50 Hz field only, ignoring harmonics.

Assessments may be offered for other conditions as well, eg abnormal operating conditions, but these are not required, and compliance with Government policy will be assessed for the above conditions.

Should compliance be demonstrated by calculations or measurements?

For sources that have a defined geometry that lends itself to calculations, such as overhead power lines and underground cables, calculations will usually be the preferred method of demonstrating compliance. For sources with a more complex geometry, measurements may be preferred.

Measurements are acceptable if they can be performed for, or scaled to, the above conditions.

Calculations are always acceptable if performed in accordance with the following specification and do not need to be supported by measurements, although measurements may be offered in addition.

Details of acceptable calculations

Calculations performed in accordance with the following will be regarded as acceptable evidence of field levels:

- for linear sources such as overhead lines and underground cables, are based on the infinite-straight-line approximation;
- are of the unperturbed field;
- take account of the correct conductor(s) number, type and size;
- ignore zero-sequence and negative-sequence currents, and voltages and currents induced in the sheath, ground or earth wire;
- for electric fields, treat the ground as a perfect conductor;

and in addition, specifically for overhead lines:

- take account of the basic tower geometry for the design of line in question, but ignore variations in conductor spacing at angle towers etc.

More detailed evidence will also be acceptable if offered but is not required, including:

- Calculations based on the actual conductor geometry rather than the infinite straight line approximation;
- Calculations taking account of perturbations to the electric field from conducting objects.

Committing to Good Practice

This is a voluntary Code of Practice, supplemented by the companion Code "Optimum phasing of high-voltage double-circuit power lines". Industry and Government are committed in their efforts to demonstrate assessment and compliance with EMF public exposure limits.

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URN : 10D/991

