

TO: CITY MANAGER

1997 AUGUST 7

FROM: DIRECTOR PLANNING AND BUILDING

SUBJECT: ZONING BYLAW TEXT AMENDMENT
PROCEDURES AND REQUIREMENTS FOR ANTENNAE

PURPOSE: To recommend amendments to the section of the Zoning Bylaw which regulates antennae and to provide policy direction for collocation of antennae.

RECOMMENDATIONS:

1. **THAT** the City Solicitor be authorized to prepare a bylaw amending the Burnaby Zoning Bylaw as described in Section 4.4 of this report.

REPORT

1.0 INTRODUCTION:

The use of cellular technology for personal and business communications is rapidly increasing, and is destined to grow further in the future as new technological improvements continue to be introduced. As such, there is a pronounced demand for antenna installations to support these communication networks in developed areas such as this, with service providers needing additional sites and physical installations to handle a rapidly-growing number of system subscribers and to maintain seamless coverage of the whole urban area.

Burnaby is experiencing a significant increase in the number of applications for such antennae, many of which can be quite unobtrusive and can be considered reasonable additions to the built environment. In light of the decreasing size of many antennae and the cellular companies' ability to make antennae less obtrusive through design innovations, the regulations for approving antenna developments have been reviewed and recommendations to amend the Zoning Bylaw are provided. In addition, with regards to concerns about the number of individual antenna sites, this report outlines an approach for ensuring better co-ordination between the cellular communication companies for new free-standing antennae structures.

2.0 BACKGROUND:

- 2.1 Currently, the Burnaby Zoning Bylaw lists antennae as a permitted principal use in the P2 Administration and Assembly District. In addition, Section 6.21 of the Zoning Bylaw states:

"An antenna is permitted in any zoning district if it has been given preliminary plan approval and meets the following qualifications, namely:

- (a) it is attached to a building,*
- (b) it is at least 9.1 m (30 ft.) above the ground.*
- (c) it covers or occupies a maximum of 0.93 m² (10 sq.ft.) on the building face and the total area on any building face occupied by antennae does not exceed 3.72 m² (40 sq.ft.), and*
- (d) it does not extend more than 1 m (3.2 ft.) above the highest point of the building face."*

If a proposal is received to develop antennae on a property where the antenna is a principal use on the property and the proposal does not conform with Section 6.21 of the Bylaw, the applicant has several potential options. The first is to modify the proposal to conform to the requirements of Section 6.21; the second would be to rezone the site to the P2 District to permit the antennae as a principal use. A third option would be to appeal to the Board of Variance for a minor variance on Section 6.21 (b), (c) or (d). Variance of Section 6.21 (a) is not within the jurisdiction of the Board of Variance.

The report that recommended the text amendment to the Zoning Bylaw to add Section 6.21 was received by Council on 1996 May 13 and the amending bylaw was given Final Adoption on 1996 July 22. Prior to that text amendment, all antennae developments on a property that were a principal use were required to go through the rezoning process to rezone the site to P2 District. The text amendment proposed to Council in May 1996 was recommended by staff in light of two significant trends related to this type of application. The first trend was an increase in the number of applications for antennae, while the second trend was reduction in the physical size of the antennae along with advances made by equipment manufacturers to make the antennae less obtrusive.

2.2 In terms of previous development activity in this field, the 1996 May 13 Council report noted that prior to 1990 most antennae were erected without consultation or approval from the Municipality and no rezoning applications were submitted for antennae developments as a principal use.

However, on 1990 October 17, Burnaby received an advisory from Communications Canada regarding the licensing of radio transmission installations. The advisory noted that in recent years, there have been objections expressed regarding the construction or modifications of some antennae and their supporting structures and that the Department of Communications believes that municipal authorities can meaningfully influence the characteristics of radio communications antennae within their boundaries. In accordance with the above, the

Department of Communications advised that as of 1990 October 15, its licensing procedures had changed to offer municipal authorities an opportunity to state their views about radio authorization applications.

The Department of Industry, commonly called Industry Canada, is the federal government department generally responsible for radio communications in Canada. Under the authority of the Radio Communications Act, the Minister has the power to approve where each antenna system may be located. Industry Canada's policy is that it will consider environmental effects and conformance to Safety Code 6, which was described in the 1996 May 6 and 1997 March 03 Council reports, and will ensure that land-use authority consultation has been taken into consideration before issuing such authorizations. For cellular communications companies, this consultation takes place through applications for Preliminary Plan Approval and by Council's consideration of rezoning requests where necessary.

- 2.3 Since the above text amendment was approved by Council, the number of applications for antennae has increased significantly and the size of many antennae continues to decrease. As many of the antennae are significant structures and the cellular communication companies have relatively short time frames to establish their communications network in the case of the new companies and PCS systems, or for established companies to upgrade their existing facilities, staff are regularly approached by the cellular companies seeking quicker approval processes for specific antenna developments.
- 2.4 On 1997 February 20, the Advisory Planning Commission expressed concern about the growing number of requests for antennae installations throughout Burnaby and that cellular companies were requesting these installations with no certainty as to the number or location of future requests. At that time, the Commission requested that Council direct staff to investigate their concerns regarding antenna installations, specifically encouraging co-operation between cellular communication companies in creating an overall plan of development for the installation of cellular antennae.
- 2.5 The purpose of this report is to respond to industry concerns about the approval process for antennae developments and to address concerns regarding the number of antennae installations and the need for co-ordination among the cellular companies.

3.0 CELLULAR COMMUNICATION COMPANIES AND COLLOCATION:

- 3.1 The use of cellular communications has greatly exceeded the forecasts within the industry. Therefore, the necessity of constructing antennae developments in order to meet demand has significantly increased pressure on the local government approval process. In addition, two new communications companies received permission from the federal government to

construct and operate national cellular communication networks. These companies, MicroCell and Clearnet are now establishing cellular communication networks and Rogers Cantel and B.C. Tel Mobility Cellular are also enhancing their cellular networks, while establishing Personal Communications Services (PCS) networks.

- 3.2 With regard to concerns about co-operation between the companies and the creation of an overall plan of development, this Department has been encouraging joint installations since the process for licensing radio transmissions was changed by Communications Canada in 1990.

Staff have been dealing with the issue of collocation on a site by site basis. First, in terms of antennae development on buildings, which are largely approved through the PPA process in accordance with Section 6.21 of the Bylaw, the potential for collocation may be limited by the size restriction in Section 6.21 (c), which limits the size of individual antenna and the total size of antennae on a building face. This is still considered a positive limiting factor as excessive antennae mass on a building face could be quite a negative influence on the urban design/appearance of Burnaby's built environment. Therefore, collocation on buildings is achieved as long as it conforms to the Zoning Bylaw regulations on the maximum area covered.

- 3.3 With regard to antennae developments on free-standing structures, such as monopoles, it is quite a different situation. Unlike antennae developments on existing buildings, antennae on new free-standing structures are often obtrusive due to the support structures - which are up to 120 feet high - required to support them. In these cases, staff have strongly encouraged collocation to be explored in order to limit the number of individual structures required, but we are not convinced through our experience on individual applications, that there is sufficient co-ordination among the companies for collocation to be carried out independently. In response to this objective staff have requested the following when cellular companies apply for rezoning to permit free-standing antennae structures:

- a) Written proof that the applicant has asked the other three cellular companies if they wish to collocate on that structure and what their responses were.
- b) Written proof from the applicant that the proposed free-standing structure is designed to accommodate collocation or that it could be easily modified to permit collocation.

There is general agreement between the cellular companies and staff that collocation on free-standing structures should, in many cases, be limited to two companies due to structural engineering problems, liability concerns and the potential obtrusiveness of too many antennae on one structure. Utilizing the above requirements, staff are confident that they can

work with the cellular companies to encourage collocation of free-standing structures for antennae as much as possible.

4.0 DEVELOPMENT REGULATIONS GOVERNING ANTENNAE:

4.1 In light of the concerns of the cellular communication companies regarding the approval process for antennae, the number of applications being submitted, the significant potential for appeals to the Board of Variance and the more compact, less obtrusive nature of many emerging antennae proposals, the regulations regarding antennae in the Bylaw have, once again, been reviewed.

Two examples are presented to illustrate that many antennae can be simple, unobtrusive structural additions to the urban built environment, which would not likely be of concern to the general public in terms of aesthetics. A rezoning application (Rezoning Reference #15/97) was recently submitted to Council to rezone a portion of 402 Willingdon Avenue to permit two cylindrical antennae approximately 2½ ft. in height and 2 inches in diameter on an existing building. In that case, the proposed antennae bases were 20 feet above the ground, while Section 6.21 (b) states an antenna must be 30 feet above the ground. This application was later withdrawn and the proposal was considered and approved by the Board of Variance. The other example is that several of the cellular companies wish to erect antennae on B.C. Hydro transmission towers, which would require rezoning to the P2 District. A development plan has been received for one such proposal which shows 12 standard 4 ft. tall by 1 ft. wide antennae on top of a 131 ft. high existing transmission tower at a location that is not proximate to any existing planned residential or business uses.

4.2 As part of the review of antennae, information on what other municipalities utilize for regulations and process for antenna developments has been updated from the previous text amendment. At this time we have responses from eleven other municipalities in Greater Vancouver. In several cases, the municipality's requirements involve more than one type of process category, and in some cases, the process required depends on the proposed location and whether or not the proposal is for a free-standing structure. Therefore the total number of municipalities listed in the categories total more than eleven.

Seven municipalities permit antennae in all zoning districts, with proposals processed through Building Permit applications. Five municipalities require Development Permits in some cases, while two municipalities refer applications to an Advisory Design Panel. Burnaby does not have a Development Permit system or an Advisory Design Panel. Two municipalities require a Development Variance Permit if the antenna exceeds the height restrictions in the Zoning Bylaw. One municipality requires antennae on towers to go through the rezoning process and one municipality requires all antennae to go through rezoning.

The information obtained in this survey of other Greater Vancouver municipalities is considered generally supportive of the concept of liberalizing Burnaby zoning requirements for principal use antennae.

- 4.3 It is acknowledged that in response to some previous rezoning applications for cellular antennae, neighbouring residents have expressed concern about health and safety matters related to cellular antenna. In this regard, two previously noted reports have been submitted to Council on the utilization of Safety Code 6 by Industry Canada in assessing applications for cellular antenna. While Council has approved most rezoning applications that have been submitted for cellular antennae, there was recently one application (Rezoning Reference #20/97) to rezone a site to permit cellular antennae at the Crest Shopping Centre which Council defeated at Second Reading after concern was expressed by some residents at the Public Hearing regarding health concerns. It should be noted that if Council were to approve the text amendments recommended in this report, the antenna development proposed for the Crest Shopping Centre could be approved through the PPA process.

Health and Safety matters related to antennae are within the jurisdiction of the federal government and Health Canada indicates that biomedical studies in Canada and other countries show that there is no scientific or medical evidence that a person will experience adverse health effects from exposure to radio frequency fields, provided that exposure is within the guidelines set out in Safety Code 6. At this time, Burnaby does not have scientific evidence to question the federal government's standards. In addition, staff forwarded a copy of the submission made to Council at the Public Hearing for Rezoning Reference #20/97 regarding health and safety concerns to Health Canada for their comments. Their response is attached as Appendix "A". It is evident that after reading Mr. Whiffen's submission, Health Canada continues to support Safety Code 6 as providing appropriate standards. Industry Canada has indicated that they have prepared a video that Burnaby may obtain, which explains the approval process for radio communications installations and that Industry Canada is training representatives to provide presentations on the approval process. If Council wishes to view the video or receive a presentation from Industry Canada, this can be arranged. Industry Canada is the regulatory body which ensures that the radio communication facilities are installed and operated in conformance with Health Canada's guidelines. If Council wishes to obtain further information on how Safety Code 6 was formulated, Health Canada could be consulted for technical information. Therefore it was concluded that the primary local government issue related to antenna developments is aesthetics and urban design considerations. In light of the fact that there is virtually no pedestrian or vehicular traffic associated with an antenna development and that health concerns are regulated under federal government mandate, the only land use consideration appears to be the urban design characteristics of the antenna.

4.4 It is the general intent of the proposed amendments to the Zoning Bylaw to allow simple, unobtrusive antennae, which will generally be compatible with their surrounding area to be processed through the PPA process, while potentially visually obtrusive antennae proposals would continue to require rezoning. In light of the above considerations, the following amendments are proposed to Section 6.21 of the Zoning Bylaw, with specific wording to be determined by the City Solicitor:

- i. Representatives of the cellular companies have made several presentations to staff regarding unobtrusive antennae additions to existing structures, such as B.C. Hydro transmission towers, architectural features and sports field lights. This type of antenna development is considered superior to those involving the construction of new free-standing structures to support antennae, and is supported, subject to a limitation on the height extension of the structure.

It is recommended that antennae which are proposed to be attached as additions to pre-existing free-standing structures, where that structure exists for a purpose other than the antennae and any necessary vertical extension of the structure does not exceed 15 feet, be included in Section 6.21 for processing through the PPA process.

- ii. The general objective of the present minimum height was to keep the antennae above the normal street level sight lines. However, this has caused some difficulty for the cellular companies where there are no buildings taller than a single storey in the area. It is acknowledged that as antennae become smaller they are more readily accepted as another common appurtenance to a building.

Therefore it is recommended that the minimum height for antennae processed under Section 6.21 be lowered to 3m (10 ft.) above the ground.

- iii. In the 1996 May 8 Council report on antennae regulations, it was stated that staff would prefer that antennae not extend beyond the parapet line at all. In order to promote a cleaner, uncluttered skyline in Burnaby and in consideration of the reduction of the minimum height requirement, it is recommended that the antennae processed under Section 6.21 not extend above the highest point of the building face.

Some clarification is required on the interpretation of building face. Building face is meant to refer to significant physical components of the mass of a building, such as those included in Section 6.4 (4) of the Bylaw. This includes mechanical penthouses, church spires and domes and fire towers. Building face should not be interpreted to include small elements on a building such as those listed in Section 6.4 (3) of the Bylaw, such as electrical service masts, flues, chimneys and flagpoles. The overall intent is that the building face provide a significant backdrop into which an antenna may blend.

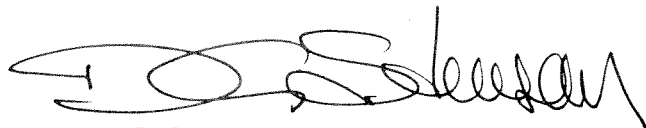
5.0 CONCLUSION:

5.1 In light of the continuing trends of significant increases in the number of applications for antennae and the decreasing size of some antennae, as well as the cellular companies' increasing ability to design the antennae and any appropriate shrouding to make antennae less obtrusive, staff have reviewed the regulations in the Zoning Bylaw related to the construction of antennae. The review concluded that many antenna proposals are insignificant, unobtrusive developments which would likely not be of concern to the general public in terms of aesthetics. Therefore, the following amendments to Section 6.21 of the Zoning Bylaw are recommended in order to streamline the process for such routine, insignificant antennae developments, while still encouraging a clean, uncluttered skyline in Burnaby.

- (i) permitting antennae to be attached to existing structures that exist for other purposes, with a maximum extension of the structure of 15 feet.
- (ii) lowering the minimum above ground height of antennae from 30 feet to 10 feet.
- (iii) requiring antennae to not extend above the highest point of a building face, rather than permitting antennae to extend 1 metre above a building face.

All new free-standing cellular antennae towers would still be considered through rezoning.


With reference to collocation, staff have instituted an approach for ensuring better coordination between the cellular communication companies on proposals for new free-standing antennae structures which staff are confident will encourage collocation on free-standing structures as much as possible.



D. G. Stenson
Director Planning and Building

BW:gk
Attach

cc: City Solicitor


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July 23, 1997

 Mr. Barry Waitt
 City of Burnaby
 Planning and Building,
 4949 Canada Way
 Burnaby, B.C. V5G 1M2

Dear Mr. Waitt:

The submission by Mr. Whiffen expressed considerable concern about the possible relationship between the radiation from cellular transmission towers (radiofrequency radiation, RF) and a variety of health effects. While his concern is understandable in view of the proximity of his mother's residence to the proposed tower site, his theory is not substantiated by scientific research. Major reviews of human studies involving RF exposure at the levels produced by cellular towers conclude that such studies do not provide clear evidence of detrimental health effects. Most recent biological research has focused on cancer, but no persuasive evidence has emerged to suggest that RF radiation is able to influence any of the accepted stages of the cancer process.

His submission questioned the adequacy of Safety Code 6 for protecting human populations and suggested that further installation of cellular transmission facilities be suspended. The exposure limits of Safety Code 6, which were developed by the Radiation Protection Bureau of Health Canada, are based on a review of international standards and the evidence of biological effects in animals and cell systems from research spanning a period of about thirty years. The public exposure limits specified in Safety Code 6 were set much lower than the thresholds observed for potentially harmful effects. For the general public, a prudent fifty-fold safety margin from the threshold was incorporated.

The Safety Code is revised periodically to incorporate information from new research. Safety Code 6 is being revised again at this time; the last revision took place in 1990. The draft revision has been widely distributed for comment by scientific and regulatory groups as well as various interest groups.

The Radiation Protection Bureau is actively involved in a broad range of activities concerning protection from exposure to electromagnetic radiation. Among them is the assessment of RF radiation exposure from cellular transmission facilities. In the last year, surveys were conducted at a total of 7 different cellular facilities ranging from rural, or low density coverage sites to urban, high density and roof-top mounted sites. At all sites, in areas accessible to the public, RF radiation levels were found to be hundreds to thousands of times below the national and international exposure

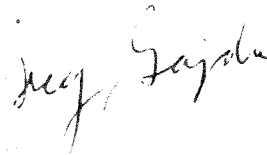
standards established by:

1. The International Non-Ionizing Radiation Protection Committee of the International Radiation Protection Association (1988).
2. The Institute of Electrical and Electronics Engineers / the American National Standards Institute (1991/1992).
3. The American Conference of Governmental Industrial Hygienists (1995-96).
4. The European Committee for Electrotechnical Standardization (1995).
5. The Standards Association of Australia (1990).
6. The National Radiological Protection Board, the United Kingdom (1993).
7. The Japanese Telecommunications Technology Council (1990).
8. The Federal Office for Radiation Protection, Germany (1990).
9. Health Canada (1991)

The limits specified in Safety Code 6 are comparable to all scientifically-based, international standards and are the best measures for protecting members of the public from radiofrequency radiation exposure. This Bureau will continue to review and assess the scientific literature on this subject and make adjustments, as needed, to the exposure limits.

I trust that the above information answers the questions you raised.

Yours sincerely,



Greg Gajda
Research Scientist
Consumer & Clinical Radiation
Hazards Division