Extended essay cover

Candidates must complete this page and then give this cover and their final version of the extended essay to their supervisor.

Candidate session number	
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Examination session (May or November)	May	Year	2012

Diploma Programme subject in which this extended essay is registered: _Geography_

(For an extended essay in the area of languages, state the language and whether it is group 1 or group 2.)

Title of the extended essay: _The causes of vandalism in Eindhoven_

Candidate's declaration

This declaration must be signed by the candidate; otherwise a grade may not be issued.

The extended essay I am submitting is my own work (apart from guidance allowed by the International Baccalaureate).

I have acknowledged each use of the words, graphics or ideas of another person, whether written, oral or visual.

I am aware that the word limit for all extended essays is 4000 words and that examiners are not required to read beyond this limit.

This is the final version of my extended essay.

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Name of supervisor (CAPITAL letters) _____

Please comment, as appropriate, on the candidate's performance, the context in which the candidate undertook the research for the extended essay, any difficulties encountered and how these were overcome (see page 13 of the extended essay guide). The concluding interview (viva voce) may provide useful information. These comments can help the examiner award a level for criterion K (holistic judgment). Do not comment on any adverse personal circumstances that may have affected the candidate. If the amount of time spent with the candidate was zero, you must explain this, in particular how it was then possible to authenticate the essay as the candidate's own work. You may attach an additional sheet if there is insufficient space here.

_____ has produced an essay with a firm theoretical base, and related it to work in Canada & Iran. He has shown clear insight into the issues surrounding vandalism & has found some excellent appropriate local data sources. He showed excellent initiative & a structured approach to collecting information on the situation in chosen neighbourhoods in Eindhoven.

His analysis is very perceptive, helped by well illustrated results, and he clearly identified key issues.

Overall an excellent original extended essay.

This declaration must be signed by the supervisor; otherwise a grade may not be issued.

I have read the final version of the extended essay that will be submitted to the examiner.

To the best of my knowledge, the extended essay is the authentic work of the candidate.

I spent [4] hours with the candidate discussing the progress of the extended essay.

Supervisor's signature: _____ Date: 31/1/2012

Assessment form (for examiner use only)

Candidate session number [REDACTED]

Achievement level

Criteria	Examiner 1	maximum	Examiner 2	maximum	Examiner 3
A research question	2	2	2	2	
B introduction	2	2	2	2	
C investigation	3	4	3	4	
D knowledge and understanding	4	4	4	4	
E reasoned argument	4	4	4	4	
F analysis and evaluation	3	4	3	4	
G use of subject language	4	4	4	4	
H conclusion	2	2	2	2	
I formal presentation	4	4	4	4	
J abstract	2	2	2	2	
K holistic judgment	4	4	4	4	
Total out of 36	34		34		

(lack of control area reduces reliability of findings)

e of examiner 1: _____ [REDACTED]   Examiner number: _____

ITAL letters)

e of examiner 2: _____ [REDACTED]   Examiner number: _____

ITAL letters)

e of examiner 3: _____   Examiner number: _____

ITAL letters)

IB Cardiff use only: B: _____

IB Cardiff use only: A: 101836   Date: 22/5

THE CAUSES OF VANDALISM IN EINDHOVEN

CANDIDATE NUMBER:

RESEARCH QUESTION: What socio-economic factors and types of urban design lead to high rates of vandalism in Eindhoven's neighbourhoods?

SUBJECT: Geography

Word Count: 3961

ABSTRACT

Eindhoven, a city of 215,000 inhabitants in the south of the Netherlands, is currently plagued by vandalism, a recognized crime. This essay aims to answer the question, '**What socio-economic factors and types of urban design lead to high rates of vandalism in Eindhoven's neighbourhoods?**'.

Finding the cause of this unusually high rate of vandalism is the first step towards preventing it. Investigation into this was carried out in two main steps. Firstly, recorded statistics from the city council on vandalism were compared with statistics on other social factors. This revealed that the neighbourhoods with the most vandalism could be separated into two types; the row of the neighbourhoods in the district 'Woensel-Noord' with the highest teenage populations of the city and those on the outer-edge of the ring road with the lowest land values of the city.

The second part of the investigation involved carrying out fieldwork in 2 neighbourhoods within each of the two areas mentioned above (4 in total). The purpose of this was to investigate the topographical structure and building design of the neighbourhoods. Also it was only by actually being in these neighbourhoods that it could be appreciated how a large teenage population in Woensel-Noord can lead to mass loitering by teenagers and eventually vandalism at their bored or frustrated hands, and low land value around the ring road leads to a spiral of degrading building management, where vandals feel less and less guilt at vandalizing the buildings around them whose appearance keeps getting worse. It was concluded that the lack of investement in these neighbourhoods lead to the high vandalism rates. For the neighbourhoods in Woensel-Noord, the conclusion was that the dense combination of parks, flats and shops provided the ideal environments for teenagers to loiter, commit vandalism, and then escape the crime scene unnoticed.

CONTENTS

INTRODUCTION

In the modern world, urban areas around the world often face high concentrations of criminality. Vandalism, which is defined by English law as, *'Intentionally or recklessly destroying or damaging any property belonging to another without lawful excuse'* (in the criminal damage act 1971, chapter 48) [1], is a crime that is frequently committed in urban areas. Not only does vandalism affect the buildings and people of a neighbourhood in which it occurs, but it can also be attributed to the way in which a neighbourhood was prior its occurrence, which makes it particularly interesting to study from a geographical perspective. Studies like that of Saeedeh Rezaee, Rao S P and Ezrin Arbi on the city of Tehran in Iran [2] demonstrate that there is a definite relationship between the structure and location of a neighbourhood and how much vandalism occurs within it. Another city which is plagued by vandalism, and which will be the object of study for this essay is Eindhoven, in the south of the Netherlands. The city proper of Eindhoven counts approximately 215,000 inhabitants, and had the highest crime rate in the Netherlands in 2010 [3]. In my interest to find out if such techniques can also be applied to Eindhoven, which displays excessive amounts of this crime and of which I am an inhabitant, I have produced the research question, '**What socio-economic factors and types of urban design lead to high rates of vandalism in Eindhoven's neighbourhoods?**'. To investigate this, urban vandalism was firstly defined and put into context within Eindhoven. Then, secondary sources were used to identify where the most vandalism-prone neighbourhoods were located and which socio-economic factors also played a role here, so that lastly, they could be focused on to collect primary data on urban structure and vandalism. The patterns that arise from this study may become important knowledge for determining ways to protect a city's neighbourhoods from the damages of vandalism, so as to make such urban environments safer and more pleasant for the people within them. My personal relation to Eindhoven through living there gives me the determination to discover how it is that so much vandalism arises, because I see vandalism as useless damage to society, and I feel that there is still a lot of knowledge to be gained on the causes of its high occurrence. Living in the city also enables me to conduct primary research.

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[1] The National Archives, 'Criminal Damage Act 1971.'

[2] Saeedeh Rezaee, Rao S P and Ezrin Arbi. 'Vandalism in Tehran, Iran: Influence of some of the urban environmental factors.'

[3] Eindhoven city council. 'Core Statistics.'
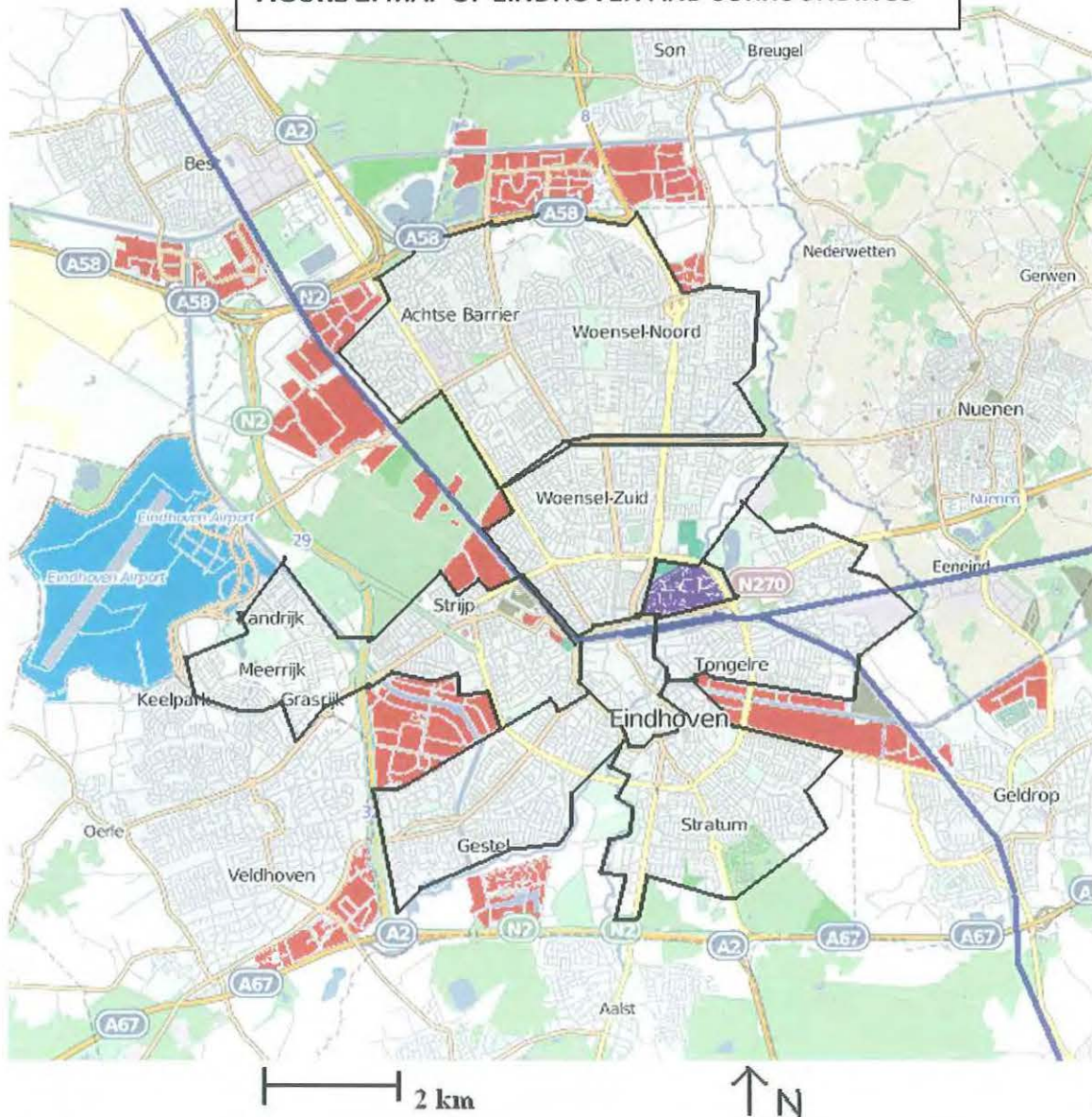
THE CITY OF EINDHOVEN

In the late 19th century, the area that is now Eindhoven was no more than 6 villages separated by forest and farmland. A sudden growth in the area's industry connected these villages in the early 20th century in terms of infrastructure, and as the industrial growth attracted workers to the area, the housing in the 6 villages linked together to become a single city; Eindhoven, whose location is shown in figure 1. The industries continued to grow, and between 1920 and 1935, the population grew by almost 60,000. This was matched by an equally rapid expansion of housing in the city, so that the areas previously belonging to the separate villages became distinct city districts. In the 1960's many immigrants from Turkey, Morocco, Suriname, the Dutch Antilles and Indonesia were attracted to work for Eindhoven's factories[5]. The result is that today, with its population of 215,000 Eindhoven is the 5th largest city in the Netherlands, and like most European cities, it is a multicultural one, with around one-third of its population being of foreign descent. Industries such as Philips Electronics and DAF trucks are still successful, and Eindhoven has been developing as a centre for high-tech industries.

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[4] World Wide Portals. 'Map of Netherlands.'

[5] Hans Schippers, Jan Korsten, Giel van Hooff, Peter Thoben, Harry Lintsen, Hans van Laarschot. 'De Negende Canon van Eindhoven.'

2

FIGURE 2: MAP OF EINDHOVEN AND SURROUNDINGS [6]

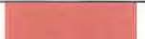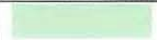|	Rail Roads		Industrial Areas		Airport
	Parks & Woodland		University Campus		Residential Areas

KEY:

Figure 2 shows Eindhoven as it is today. Each of the 6 residential districts; Woensel-Noord, Woensel-Zuid, Tongelre, Stratum, Gestel and Strijp (From North to West in clockwise direction) are outlined with black lines, with the city centre and CBD between these districts at the heart of the city. The Ring-Road is marked in yellow, encircling the centre of the city.
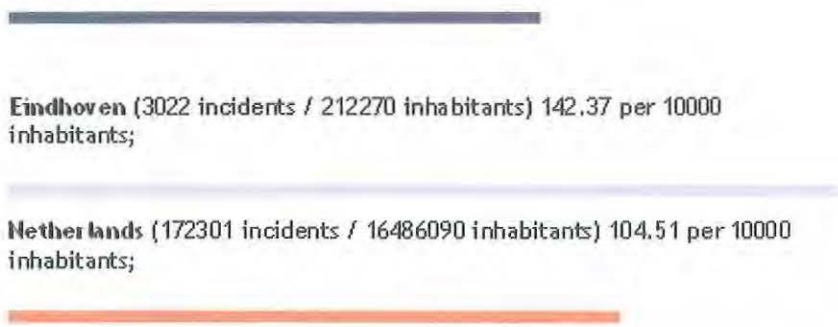
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[6] TRAVELPOD: Eindhoven, Netherlands

VANDALISM IN EINDHOVEN'S NEIGHBOURHOODS

In a 2010 study by the Dutch Newspaper 'Algemeen Dagblad' based on police records, Eindhoven was found to be the city with the most reported criminality in The Netherlands[7]. The graph below shows how Eindhoven compares with the capital city Amsterdam and with the national average in terms of incidences of vandalism per 1000 inhabitants, as taken from the Algemeen Dagblad's 2009 study[8]. As can be seen, the rate of vandalism in Eindhoven, at 142.37 incidents per 1000 inhabitants, is higher than both that of Amsterdam and of the Netherlands as a whole.

FIGURE 3: COMPARISON OF DUTCH VANDALISM RATES [9]

Amsterdam (6852 incidents / 755610 inhabitants) 90.68 per 10000 inhabitants;

Eindhoven (3022 incidents / 212270 inhabitants) 142.37 per 10000 inhabitants;

Netherlands (172301 incidents / 16486090 inhabitants) 104.51 per 10000 inhabitants;

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In Eindhoven, vandalism can occur as graffiti, damage to public property such as bus stops, bins or street lights, as well as damage to private property, such as breaking shop windows or damaging stalled bikes. Such activities can, as a developing practice named 'Crime Prevention Through Environmental Design' (CPTED) explains, be heavily affected by the structure of urban environments[10]. As the Royal Canadian Mounted Police describes, neighbourhoods can be built so as to enable residents to survey their surroundings, encourage residents to appropriately use public areas, provide appropriate street lighting, reduce places for people to hide or escape between housing, avoid hidden areas near centres of activity and avoid covered outdoor areas that could provide teenagers with a place to loiter, all of which should reduce the opportunity for vandalism[10]. Neighbourhoods in Eindhoven that do not comply with these guidelinesare expected, along the principles of CPTED, to be vulnerable to vandalism. The investigation into vandalism in Tehran made by Saeedeh Rezaee, Rao S P and Ezrin Arbi[11] also demonstrates that there were strong relationships between the maintenance level of a neighbourhood and the rate of vandalism within it. If buildings are already worn out and vandalized, vandals will feel less guilt in vandalizing these buildings further.

The police in Eindhoven have kept track of all reported incidents of vandalism in relation to the neighbourhood in which the incidents occurred, and they have made these statistics

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[7] Eindhoven city council. 'Core Statistics.'
[8] AD nieuwsmedia BV. 'AD Crime-meter.'
[9] AD nieuwsmedia BV. 'AD Crime-meter.'
[10] Government of Canada. 'Crime Prevention Through Environmental Design.'
[11] Saeedeh Rezaee, Rao S P and Ezrin Arbi. 'Vandalism in Tehran, Iran: Influence of some of the urban environmental factors.'

available on their website[12]. These are the statistics which are going to be used for the purpose of this essay, as the police are the most reliable and most directly involved source. As the primary source for reporting crime, their statistics are unambiguous, representing only incidents whereby affected civilians contacted the police, which is precisely when the incident can be classified as vandalism. In 2009 the city council divided the city into 116 neighbourhoods, including industrial areas. A neighbourhood in a residential area has its boundaries formed by main roads, so that one can cross from one neighbourhood to another by crossing such a road. In this way, all residential neighbourhoods are similar in size, and each has a particular name and a particular style of housing and topographical structure. Many have a defined centre with shops and restaurants.

FIGURE 4: NUMBER OF INHABITANTS PER NEIGHBOURHOOD AS OF 2009 [12]

Number of inhabitants:
- < 650
- 650 < 1.300
- 1.300 < 1.950
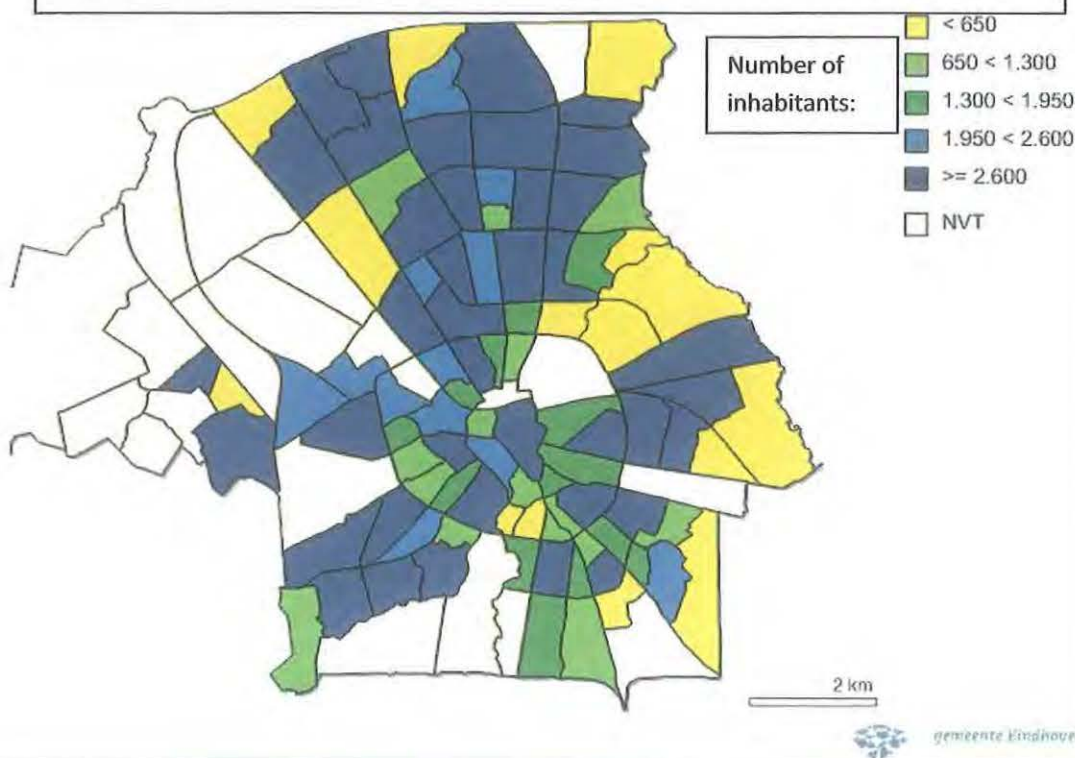- 1.950 < 2.600
- >= 2.600
- NVT

2 km

gemeente Eindhoven

Figure 4 shows how the residential areas of the city are divided into these neighbourhoods, as well as the number of inhabitants in each[9]. Areas shaded in white represent other land uses (mainly industrial). As can be seen, the greatest deal of the population lives in the Woensel-Noord and Woensel-Zuid districts to the north of the ring road, though each district has several highly populated neighbourhoods.
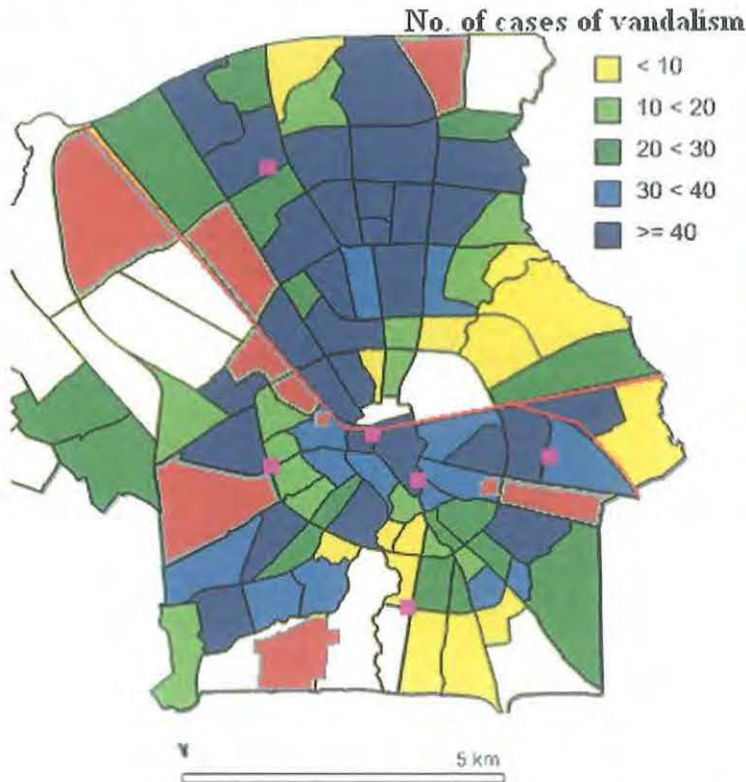
Using this source, the statistics for vandalism for Eindhoven's individual neighbourhoods could be displayed on a map, as shown below[13].In Figure 5, the residential neighbourhoods have been displayed in colours based on the amount of reported incidents of vandalism that occurred within them in 2009. Industrial areas and train tracks have been displayed in red,

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[12] Eindhoven City Council. 'Buurtmonitor (neighbourhood monitor).'

[13] Eindhoven City Council. 'Buurtmonitor (neighbourhood monitor).'

police stations as pink squares and other land uses in white. Figure 6 is an edited version of this, showing in dark blue only the 16 most vandalised neighbourhoods, and industrial areas in red. The purpose of Figure 6 is to isolate the most vandalised residential neighbourhoods in the city to find patterns based on their location.

FIGURE 5: VANDALISM IN 2009 [13]	FIGURE 6: 16 MOST VANDALISED NEIGHBOURHOODS [13]

No. of cases of vandalism
- < 10
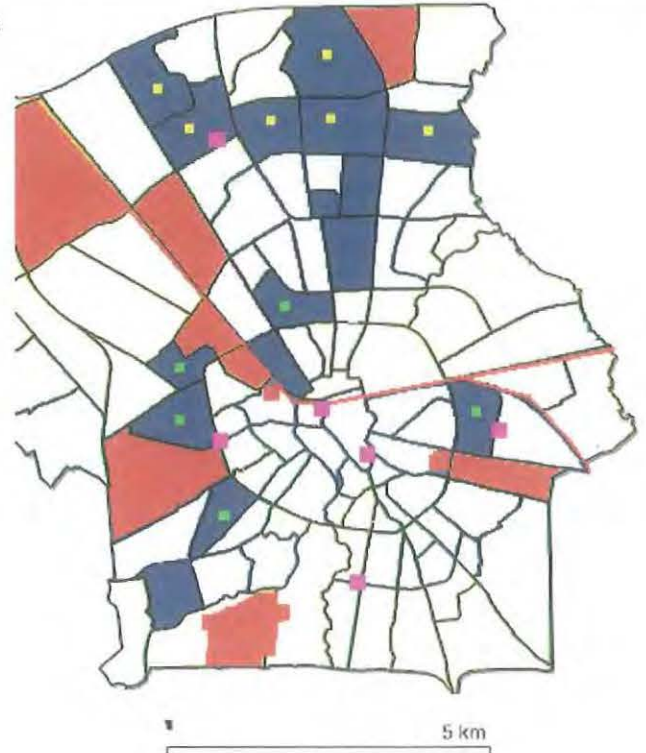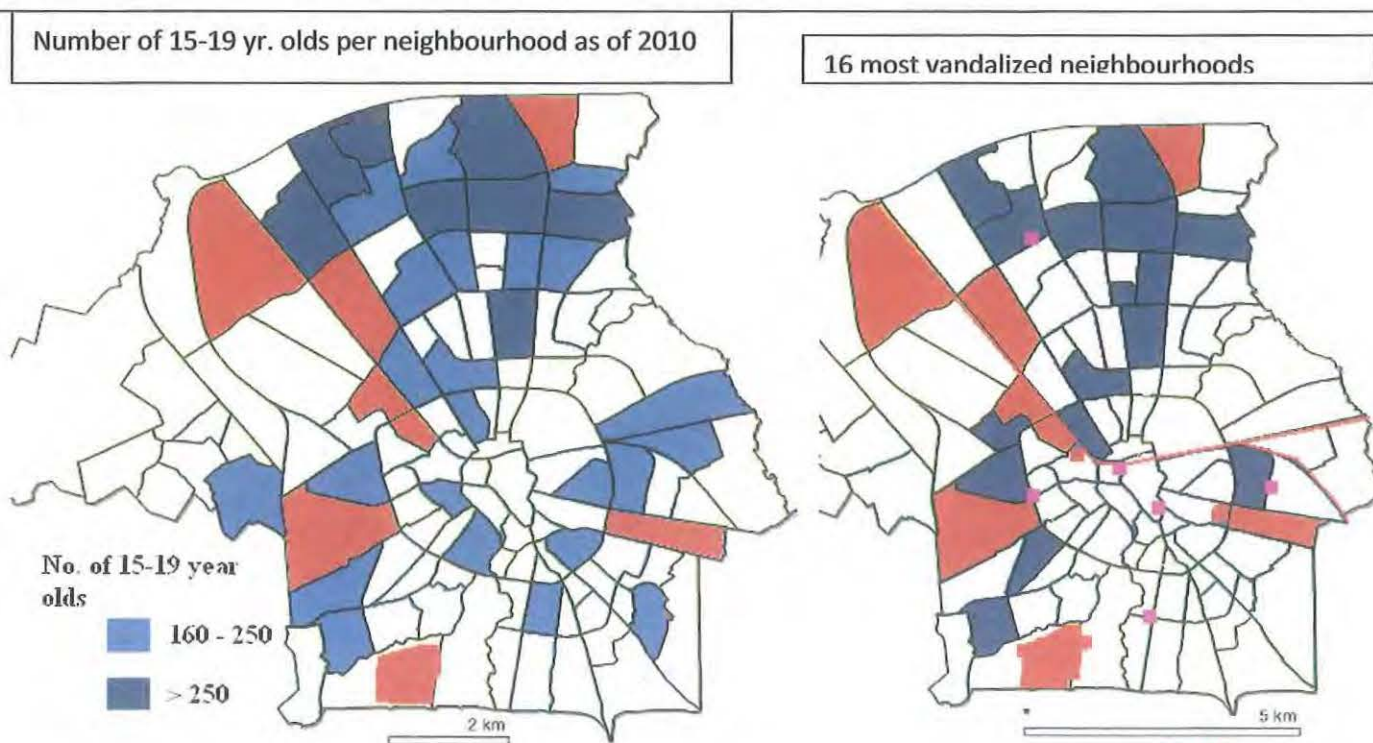- 10 < 20
- 20 < 30
- 30 < 40
- >= 40

5 km

5 km

Figure 5 shows how there seems to be no relationship between vandalism in a neighbourhood and that neighbourhood's proximity to rail roads or police stations, as many northern neighbourhoods are close to a police station yet far away from the rail roads and still display a lot of vandalism. A lot of the city's vandalism also seems to be centralised in the Woensel-Noord city district. The areas with the least vandalism are in western Stratum and northern Tongelre. Figure 6 shows how there are two main types of locations in which the most vandalised neighbourhoods are found; firstly, neighbourhoods which are located on the outer edge of the ring road and next to industrial areas (shown with green dots), and secondly, neighbourhoods which are located along a row in the Woensel-Noord city district (shown with yellow dots).

IDENTIFYING RELATIONSHIPS BETWEEN VANDALISM AND OTHER SOCIO-ECONOMIC FACTORS

This source was then used to display statistics on maps like those above to search for relationships between vandalism and other socio-economic factors in neighbourhoods. Many statistics for such factors were compared to figure 6, showing vandalism, until both maps matched, so that neighbourhoods with high vandalism rates also had a strong correlation between these factors. This showed a relationship between the two. Figure 7 shows such an example.

FIGURE 7: COMPARISON BETWEEN MAPPED STATISTICS FOR VANDALISM AND TEENAGE POPULATION [14]

Number of 15-19 yr. olds per neighbourhood as of 2010

16 most vandalized neighbourhoods

No. of 15-19 year olds

■ 160 - 250

■ > 250

2 km

5 km

Scale anomaly — keater to vre 5km or 2km for both.

Only neighbourhoods with the most outstanding results are shown in Figure 7. It can quickly be seen here that many neighbourhoods appear on both maps, especially in Woensel-Noord, indicating a relationship between the two factors being portrayed.

The limitations of this technique however are that it doesn't take into account that vandalism could also be the factor affecting the other feature, rather than the other way round, so that for example when it might seem that low house prices caused high vandalism, it could in reality be that vandalism (caused possibly by something else) was what was causing the house prices to be low. Nevertheless, two strong relationships with vandalism were found by using this technique; number of people between 15-19 years of age living in the neighbourhoods and the average land value of the neighbourhoods. The statistics for these were then plotted graphically, as shown in Figures 8 and 9 below, which represent each neighbourhood as a point [14].

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[14]Eindhoven City Council. 'Buurtmonitor (neighbourhood monitor).'

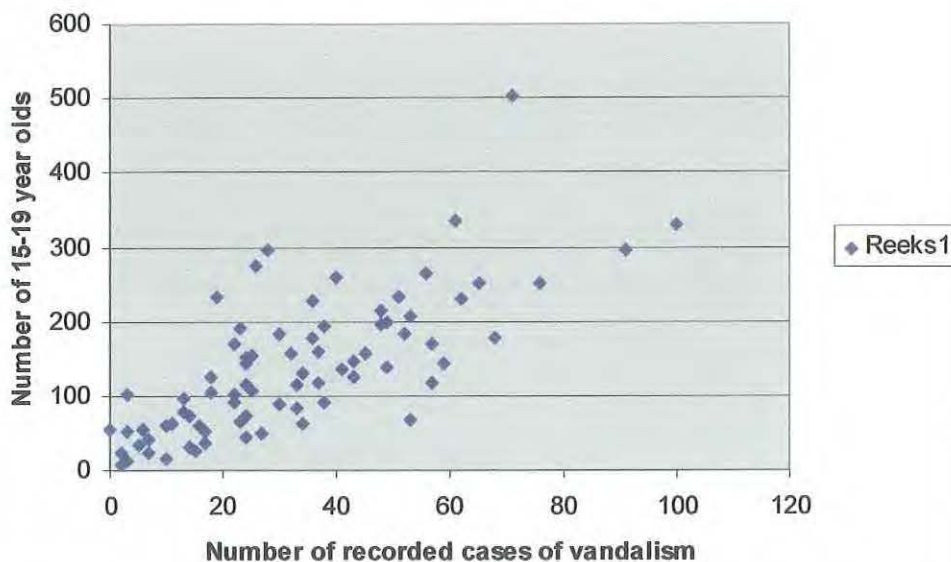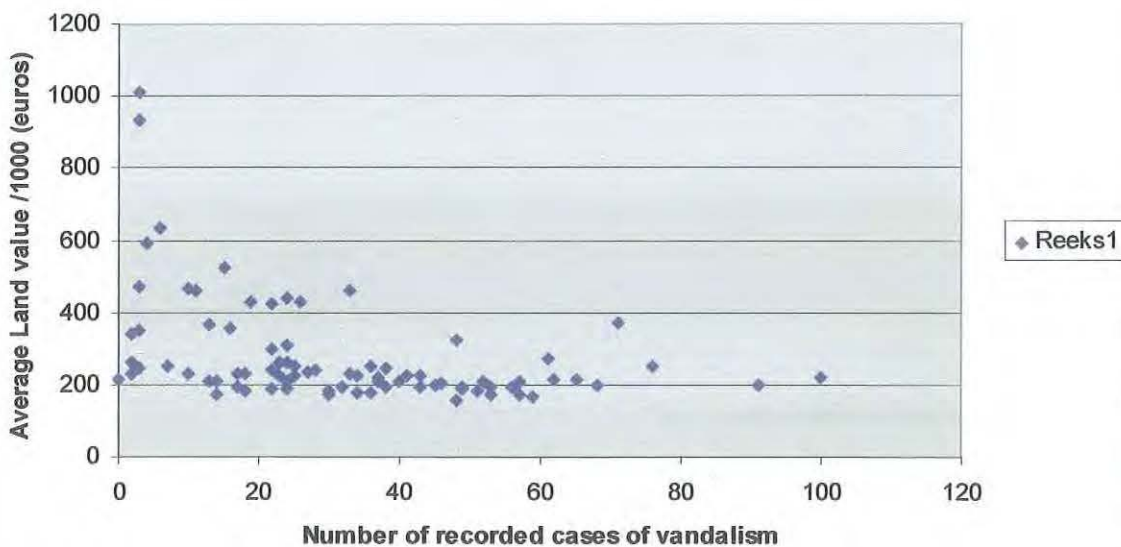**Figure 8:** **Relationship between 15-19 year olds in neighbourhoods with vandalism**

Figure 9: **Relationship between land value of neighbourhoods and vandalism**

The strong positive correlation in Figure 8 shows that generally, the more people aged between 15 and 19 in a neighbourhood, the higher the vandalism rate. Figure 9 has a weaker negative correlation, but it is still quite clear how the neighbourhoods with the highest land value have the least vandalism, and the neighbourhoods with the highest amount of vandalism generally also have low land values. One reason why the correlation isn't so strong is because over half of Eindhoven's neighbourhoods have similar average land values between 190,000 and 230,000 euros, so there isn't much variety along the y-axis of the graph. This also means that just because a neighbourhood has a low average land value, it doesn't mean that there

will be a high rate of vandalism, as the point on the bottom left of the graph show, as they represent neighbourhoods with low land value but also low vandalism rates. This means that there are factors other than low land value, especially in the neighbourhoods around the ring road, which are of influence to the high rate of vandalism. What is also clear though is that there are two distinct types of neighbourhoods involved here, as the neighbourhoods in the Woensel-Noord row do not have low land value, and neighbourhoods around the ring do not have particularly high teenage populations, yet both have high rates of vandalism. Further and more in-depth investigation must be made into some of these neighbourhoods to discover what structural features they have in common that may influence the vandalism which occurs within them. This in-depth investigation will also serve the purpose of discovering how a large 15-19 year old population can affect vandalism in Woensel-Noord, and how low land value can affect vandalism around the ring road. Immigration, which is often linked to crime, was also looked at, but statistics show that there are many neighbourhoods in Eindhoven with many immigrants, not just those with high vandalism. Unemployment is also often linked to crime, but in Eindhoven, there wasn't a strong correlation between the two.

## INVESTIGATION INTO THE MOST VANDALISED NEIGHBOURHOODS

Neighbourhoods on the outer edge of the ring road are those that were primarily built to house factory workers that needed to be close to the factories. This occurred during the period of Eindhoven's most rapid industrialisation and population growth between 1920 and 1950. The low land value such neighbourhoods have today can be attributed to several things. By being located away from the city centre and close to the noise and pollution of the factories and the busy ring road, whilst still being within the urban core of the city, these areas are made less attractive to live in. Their original purpose; to accommodate the rapid flow of low-income factory workers, as well as their relatively old age, adds to this. To fully appreciate how this could affect vandalism, the next step in the investigation was to undertake fieldwork in such neighbourhoods.
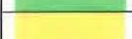
Out of the highly-vandalised neighbourhoods belonging to the group of neighbourhoods around the ring-road previously outlined, two were selected for this fieldwork; 'Drents Dorp' and 'Genderdal', which are in the city districts Strijp and Gestel respectively. From the neighbourhoods in the Woensel-Noord city district two were also selected; 'Woenselse Heide' and 'Vaartbroek'; the two residential neighbourhoods in the city with the most vandalism. Drents Dorp was rapidly built by Eindhoven's council in the early 1900's with the sole purpose of housing factory workers close to Eindhoven's industrial areas[15]. Genderdal was built entirely in the 1950's, and its construction was planned with respect to the use of automobiles[16]. Woenselse Heide and Vaartbroek were built later on in the 20th century for residential purposes as Eindhoven expanded to the north. These are appropriate neighbourhoods to use as the first two have low land value without particularly high teenage populations whilst Woenselse Heide and Vaartbroek have high teenage populations without particularly low land value. By choosing 4 neighbourhoods, the dimensions of the fieldwork remain manageable, whilst still being balanced representatives of the two types of urban areas. Their locations are shown on Figure 10 below[16].

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[15]Hans Schippers, Jan Korsten, Giel van Hooff, Peter Thoben, Harry Lintsen, Hans van Laarschot. 'De Negende Canon van Eindhoven.'
[16]Eindhoven City Council. 'Buurtmonitor (neighbourhood monitor).'

FIGURE 10: LOCATION OF 4 FIELDWORK NEIGHBOURHOODS WITHIN EINDHOVEN [17]

5 km

17
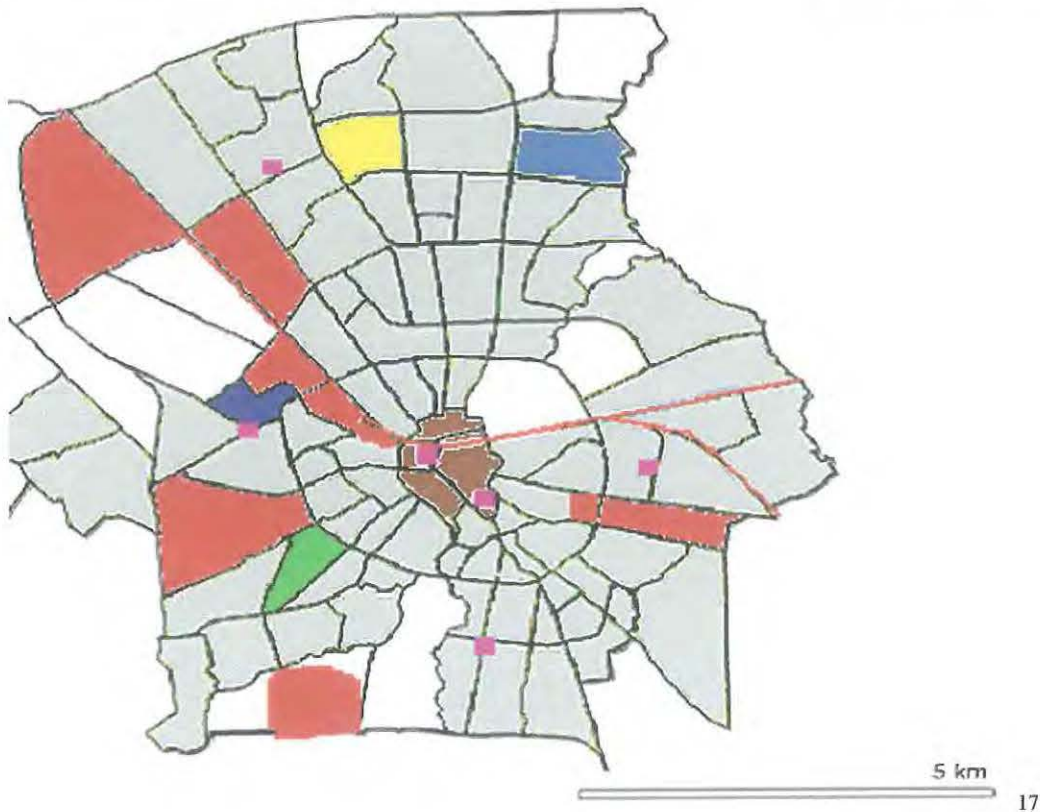
	Drents Dorp
	Genderdal
	Woenselse Heide
	Vaartbroek
	Industrial Areas
	City Centre and CBD
	Other Residential Neighbourhoods

By visiting Drents Dorp and Genderdal, photographs were taken of the urban structure of the neighbourhoods, ie. appearances of streets and buildings. Also, it was possible to locate incidents of non-repaired vandalism, which could be used to determine patterns in the types of places that were most prone to vandalism in terms of their location with respect to different land uses within the neighbourhood and with respect to the structure of surrounding buildings.

[17]Eindhoven City Council. 'Buurtmonitor (neighbourhood monitor).'

DRENTS DORP (STRIJP)

KEY:
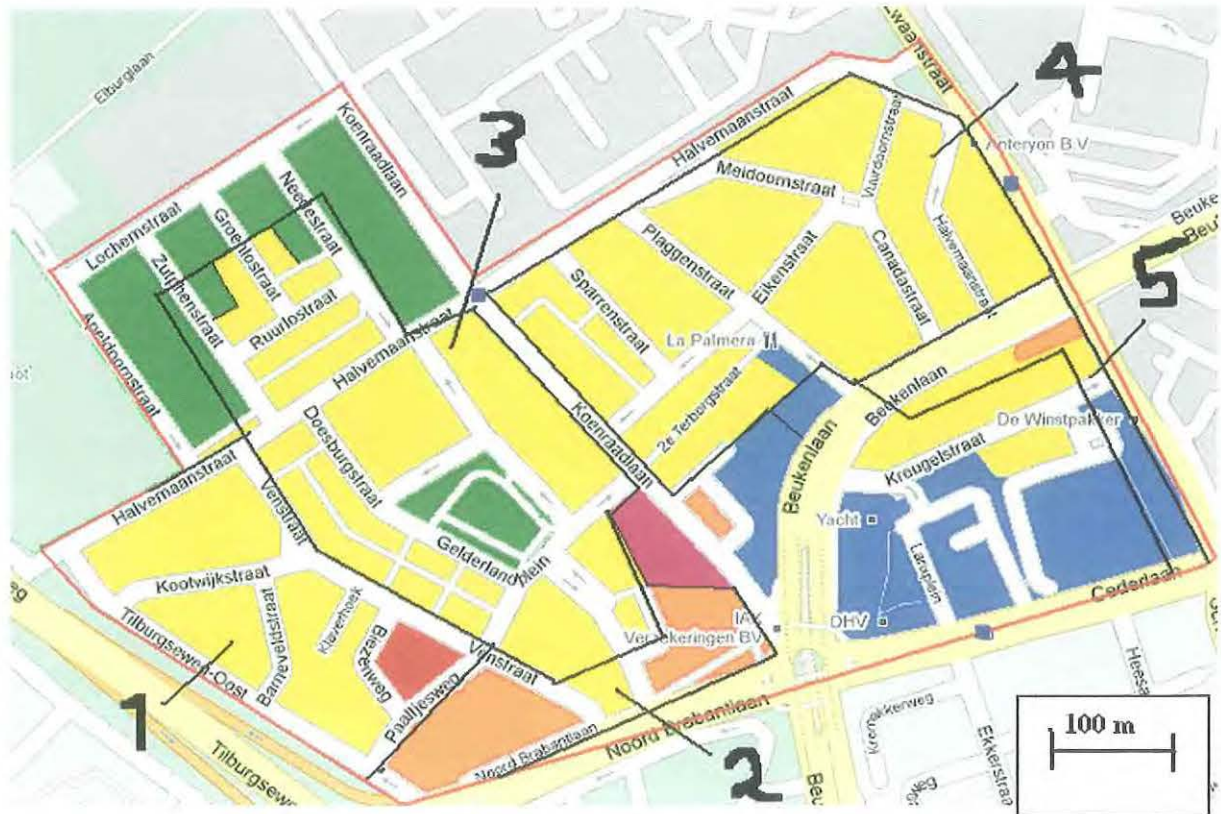
	Terraced Housing
	Apartment Housing (Highrise Flats)
	Commercial Land use
	Church
	School
	Parks / Green areas
	Bus Stops

Apart from showing land uses, Figure 11 has also been divided into separate sections, each with differences in structure and land use, as determined from first hand experience. Apparent vandalism, in the form of damaged public bins, graffiti to walls and broken windows, was mainly located in sections 4 and 5 on the map above. Section 4 is a densely populated area of terraced housing in traditional Dutch style. These houses are relatively small with very small gardens, and the streets between them are narrow and confined, yet they feel empty, with little residential surveillance. Any hidden surface is usually a target for graffiti. In some cases,

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damage has even been done to the fronts of houses. Below are some photographs illustrating this.

Figure 12: Example of terraced housing on Halvemaanstraat

(section 4)

Figure 13: Terraced house with hole in front door on Eikenstraat

(section 4)

12

In Section 5 on the map of Drents Dorp are the only shops and cafes of the neighbourhood, located along a single street (see Figure 14). There is a point where the ring road passes over this street by a bridge, with a car park underneath it (see Figure 15). This area under the bridge is very dark and concealed, resulting in heavy graffiti on the bridge's pillars and damage to cars parked underneath. Some of the shops here have hidden surfaces which are also subject to graffiti. The result is that this area looks neglected and menacing.

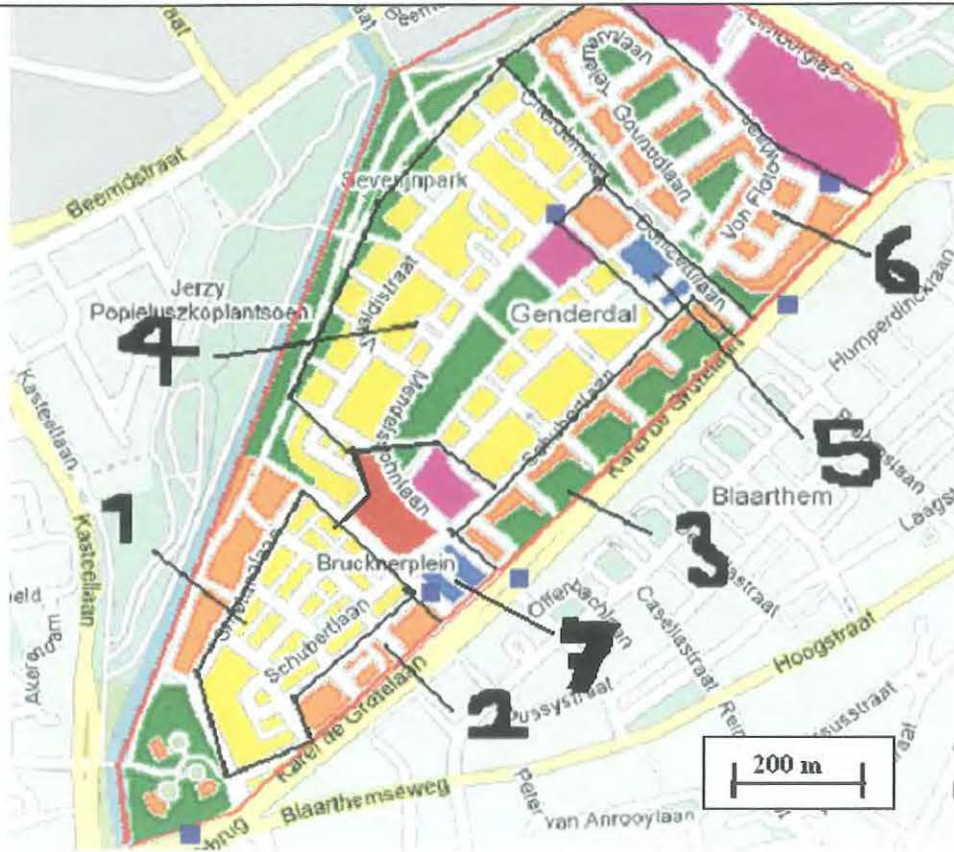**Figure 14:** Graffiti on a concealed shop surface

(section 5)

Figure 15: Under the bridge formed by the over passing ring road.

(section 5)

GENDERDAL (GESTEL)

FIGURE 16: MAP SHOWING LAND USES WITHIN GENDERDAL, edited from google.nl/maps on 25/08/11

KEY:

	Terraced Housing
	Residential flats
	Commercial Land use
	School
	Parks
	Church
	Bus Stops

As can be seen on Figure 16, Genderdal's structure is such that there are two small commercial centres; sections 5 and 7, with a large section of terraced housing in between (section 4) and flats surrounding this (sections 2, 3 and 5). Vandalism mostly occurs as graffiti on concealed surfaces of shops in these commercial centres (see Figures 17 and 19) or on large, concealed walls of the surrounding flats (see Figure 18).

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Figure 17: Graffiti on concealed walls of shops

(section 5)

Figure 18: Concealed courtyard behind run-down flats

(section 2)

Figure 19: The neighbourhood's commercial centre, with graffiti on side walls

(section 5)

Genderdal is similar in its atmosphere to Drents Dorp. In both the streets are narrow, deserted and confined, with many hidden alleys in between houses, such as in Figure 20 below, where these terraced houses are equally small and run-down. The commercial centres in both are small and highly damaged by vandalism, with little liveliness or activity around them. Combined with the low residential surveillance, this gives these neighbourhoods a menacing


FIGURE 20: ALLEY IN GENDERDAL

and depressing atmosphere, making the neighbourhood seem very derelict. The main difference between the two is that Genderdal has a lot more flats than Drents Dorp, which are equally prone to graffiti, given their broad, bare walls. Upon visiting these neighbourhoods, it definitely seems as though their low land value and poor maintenance level is what leads to this high rate of vandalism, as there is a general feeling that the residents care little about the already poor aesthetic quality of the neighbourhoods. What is also notable here is the lack of a unifying centre, and lack of activity nodes to bring the community together.

WOENSELSE HEIDE AND VAARTBROEK

The same process was repeated in the neighbourhoods Woenselse Heide and Vaartbroek in the Woensel-Noord city district. As these neighbourhoods were built almost simultaneously, their layouts are very similar, as can be seen on the maps below. Vandalism mostly occurred in the centres of these neighbourhoods, which are almost identical in layout in both. These centres consist of an area for shops, restaurants and cafes, which is firstly surrounded by residential flats, and then, moving outwards, by small parks, which in both cases, seemed to be a structure that encouraged vandalism (section 4 on both maps).

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FIGURE 21: MAP SHOWING LAND USES WITHINWOENSELSE HEIDE, edited from google.nl/maps on 25/08/11
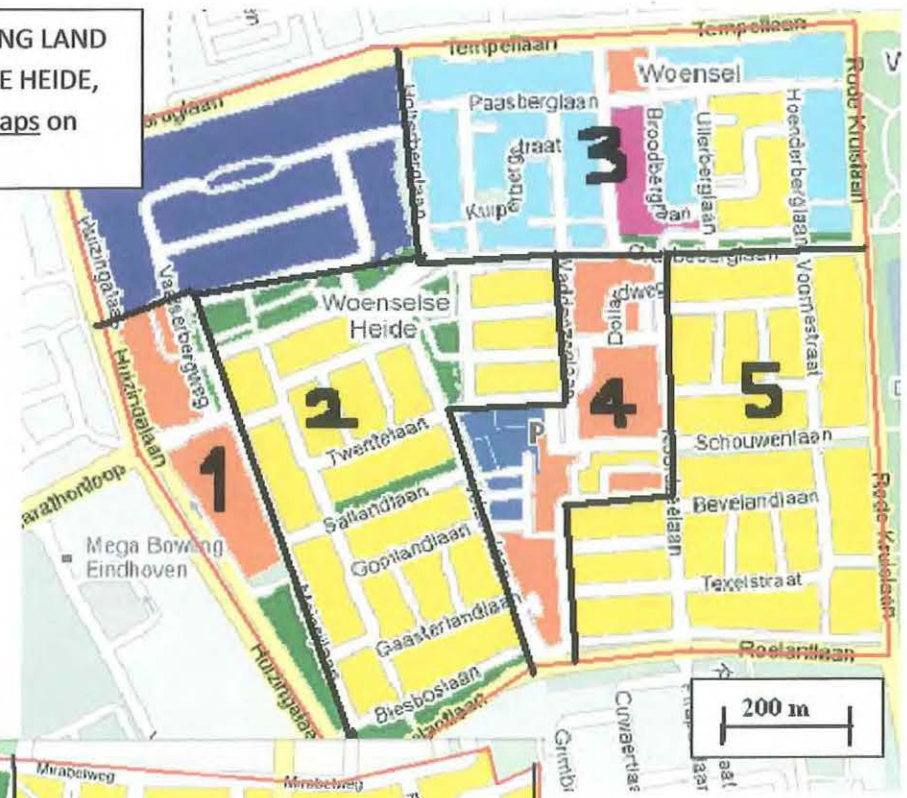
FIGURE 22: MAP SHOWING LAND USES WITHIN VAARTBROEK, edited from google.nl/maps on 25/08/11

KEY:
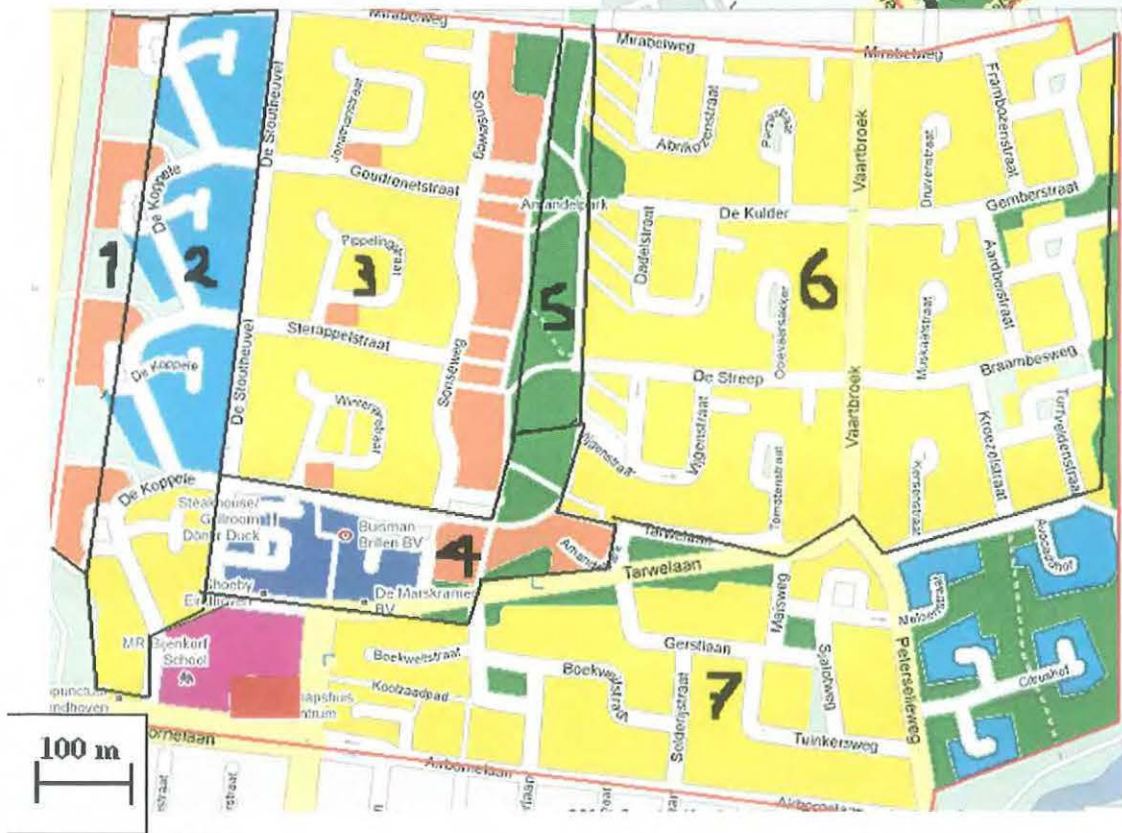
	Terraced Housing		School
	Residential Flats		Parks
	Commercial Land use		Detached Housing
	Church		Business Park

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Some photographs taken of these centres in both Vaartbroek and Woenselse Heide are shown below.

Figure 23: Wall in central Vaartbroek

Figure 24: Shops and flats in central Vaartbroek

Figure 25: Tunnel under a flat leading to shops in central Woenselse Heide

What made these areas so vandalised in terms of their structure was, in relation to CPTED[18], that there were many hidden areas near activity nodes, as well as covered outdoor areas. The shops, cafes and parks form such activity nodes, but at the same time, the flats surrounding them form barriers to residential surveillance, and the combination of these public land uses creates many hidden areas and broad surfaces which are ideal for vandals to conduct their crime unseen. For example, Figure 23 shows how an underpass, which has been constructed under a flat to connect the commercial centre to a park, provides a perfect spot for graffiti, as it is a hidden outdoor area between activity nodes. Being in these neighbourhoods in Woensel-Noord illustrated the reason why having large teenage populations affects vandalism. Teenagers in these neighbourhoods gather in groups to loiter around the commercial centres or in the parks, and in such neighbourhoods where there are many of them, these groups become quite large. Boredom or social prestige could lead to carelessness and recklessness, or a feeling of wanting to leave a mark on their surroundings, and quickly vandalism occurs. This psychology is likely to be strongest in teenagers aged 15 to 19, who often have rebelliousness and negligence of their environments. Also, to them, vandalism seems like an easy crime to get away with, especially in such urban structures as outlined above. However, without specific research into their psychology, this conclusion cannot solidly be drawn.

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[18]Government of Canada. 'Crime Prevention Through Environmental Design.'

CONCLUSION

It can be concluded that in Eindhoven, there are two main socio-economic factors that lead to high rates of vandalism; high teenage populations and low land value. What is also notable in Eindhoven is that there are two distinct types of neighbourhood for each of these factors. Neighbourhoods located on the outer edge of the ring road, adjacent to industrial areas, are prone to vandalism due to their low land value. Although low land value could be a result rather than a cause of this, the fact is that little is being invested into these neighbourhoods, as they already have the disadvantage of being located near industrial areas as well as the ring road. They are being inhabited by the city's lowest-income residents who cannot afford any better, and have no money to maintain the aesthetic quality of their neighbourhoods. The result is that these neighbourhoods have become derelict and run-down, and any damage done to them is done without a feeling of guilt or loss, only encouraging further damage. Faults in urban design are that these neighbourhoods lack activity nodes which could provide a sense of liveliness in the neighbourhood, and the result is that the narrow and menacing streets become empty and unwatched. Vandalism here is a by-product of the social deprivation. Neighbourhoods located in the Woensel-Noord city district are those with the largest teenage populations (15-19 years old). Investigation showed that this was the cause of the high rates of vandalism present in these neighbourhoods, the evidence for which is shown in a strong graphical correlation, whose data originates from a reliable and up-to-date source. Vandalism is likely to occur at the hands of bored or frustrated groups of teenagers, which, due to flaws in urban design, are provided with loitering spots as well as concealed areas of public buildings near activity nodes.

Further research into the topic could start by studying actual vandals to discover what actually triggers them into vandalism. Questions arise such as whether it is something separate that triggers people into vandalism and they see these neighbourhoods as the easiest targets, or whether being in these neighbourhoods is what triggers them to want to vandalise them. It would also be interesting to determine why vandalism seems to be mostly committed by teenagers.

The main flaw in this study is that vandalism is affected by but also affects its environment, so it becomes difficult to judge whether factors are the cause or the result of it. In this investigation, a clear relationship between two factors doesn't prove how they affect each other, which perhaps could only be solved with investigation into what kinds of geographical and structural factors lead to low rates of vandalism in other neighbourhoods. The limitation concerning the fieldwork is that is was rather superficial. Long-term monitoring and surveillance of these neighbourhoods, both day and night would have given much more insight into the causes of vandalism, as it is difficult to state that a structure's poor design leads to vandalism, since the principles of CPTED, whereby this is judged, are only guidelines. However, like this, the problem quickly gains dimensions which are beyond the scope of this essay and what is possible for me.

Altogether, this essay has demonstrated that vandalism in Eindhoven can be traced back to two separate socio-economic factors which affect two different urban areas, and that flaws in urban design can further encourage it. Adapting neighbourhoods with these features is the first step in diminishing the shameful crime, perhaps not only in Eindhoven, but in other similar cities, where the same factors could undoubtedly have this influence.

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Lacks a valid control area or areas, but good systematic account of an original topic.