To What Extent Can The Inner And Outer Cores Of Doha CBD Be Delineated?

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Fieldwork Question

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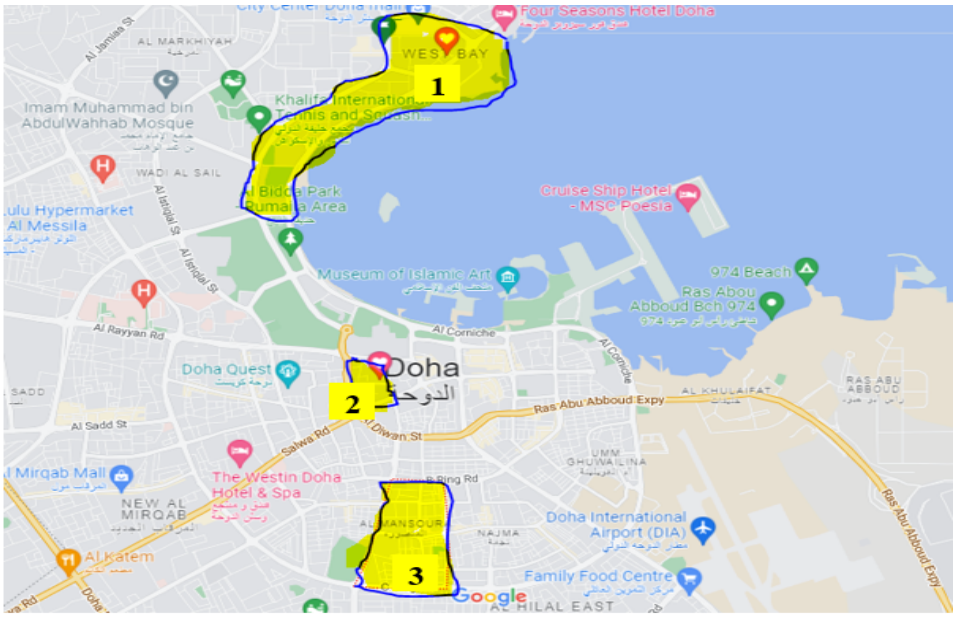
This paper will address the fieldwork question, "**To what extent can the Inner and Outer Cores of Doha CBD be delineated?** The research question is linked to the IB option of urban environments. The fieldwork will focus on whether the CBD of Doha can be delineated based on its environment's characteristics; therefore, the IB area of interest is the variety of urban environments. The data collected will help determine if the CBD's environments are different so that they can be classified into different zones.

Geographical Context

The geographical area of study is Doha, the capital of Qatar. The city interested me because of its increased prominence due to hosting the FIFA world cup 2022. Furthermore, having visited the city several times, I developed an interest in living in the city, so I chose to conduct my fieldwork there.

Doha is a port city located on the Persian Gulf coast in the Middle Eastern part of Qatar, as shown in map 1 below, making it an important global city. The city functions as the capital city of Qatar and is the country's most populous city. The study will focus on the city's metropolitan area, which had a population of 652,000 people as of 2020 (Macrotrends, 2021). The combined population of Doha's metropolitan and suburban areas is more than 2 million, accounting for more than two-thirds of the country's population (Oxford Business Group, 2016). Therefore the city is the major economic and financial hub of the country.

Map 1: Geographical location of Doha city In Qatar (Worldatlas, n.d.)



Map 2: Areas of data collection in Doha CBD

Map 2 shows the areas that were selected for data collection. The three areas were selected based on an increasing distance from the inner core, West Bay (Area marked 1),

moving into Msheireb (area marked 2), which is in the outer zone, and then Al Mansoura, further in the outer zone.

Link to Theory

The fieldwork question is related to the topic of various urban environments. One of the theories used to illustrate the urban environment is the Core frame model. The model delineates the zones of the CBD according to their functions, as shown in figure 1 below.

Figure 1: The core frame model

Figure 1 shows that a city will have an inner and outer core with different environments and characteristics. The inner core has high-rise buildings, commercial offices, and departmental stores, which make it the city's economic hub (Murphy, 2017). On the flip side, the outer core has smaller shops, shorter buildings, and residential, which are not present in the inner core (Murphy, 2017). Therefore, based on the core frame model, a city can be delineated into different zones.

Hypothesis

Based on the core frame model, the following hypothesis was developed;

1. The number of floors of the buildings will decline as the distance increases from the inner core.
2. The traffic levels will be highest in the inner core compared to the outer core.
3. The ground floor use changes from commercial use to residential use as one moves away from the CBD
4. The land use quality declines as the distance increase from the inner core.

Methods of Investigation

The data was collected in Doha between 8 am and 1 pm in the afternoon. Between 8 am and 1 pm. The time was appropriate because it is difficult to collect data in the city past 1 pm due to heat levels. Also, it is not easy to collect data at night. A street was chosen in each of the three areas of data collection to represent the transect. Systemic sampling was then used to divide the transect into 20 equal parts 10 paces apart.

Traffic

The traffic level is the number of vehicles, bicycles, and pedestrians passing a street in a given time. This information was collected from the center of the transect. Traffic movement to the right and left was recorded for 10 minutes in each direction. The data was collected through direct observation.

Heights of the buildings

The heights of the buildings were recorded using direct observation. The data was recorded for the far side and the near side for all 20 intervals along the transect. The number of floors was approximated.

Ground floor Use

The use of the ground floor was determined using direct observation at 20 points along the transect.

Land use quality

Land use quality was determined using direct observation and personal judgment. The data was collected in three criteria: the availability of parking space, built environment, and landscape quality. The scoring was done from 1-10, where 1 is for poor while 10 is for best land use.

Quality and Treatment of Information Collected and Written Analysis

Land Use Quality

The land use quality defines the standards or levels of control in how the available land is used. The land's use quality depends on the function of the specific area. For instance, the standards of building a house in a certain residential area are highly controlled, ensuring high-quality land use, while some areas have little control and poor land use quality. Figure 2 below shows the land use quality of the different zones in Doha CBD. The quality was assessed on a scale of 1- 10, where 1 is for poor quality, 5 is for average, and 10 is for top quality.

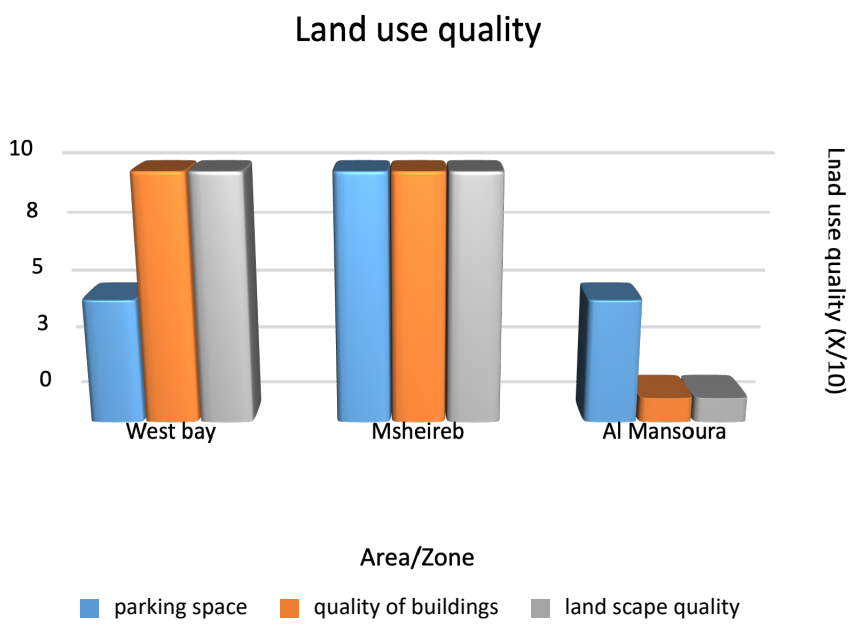


Figure 2: Land use quality

As shown in figure 2, the land use quality declines as the distance from the inner core increases, although not uniformly. Msheireb, between the inner and outer core, has the best land use quality, as seen in figure 2. However, the inner core has a much better land use quality than the Outer core, which has poor landscape quality, poor building standards, and average availability of parking spaces.

The land in a city's inner core has more value than the land in the outer core. As a result, the construction and nature of buildings and infrastructure in the inner core are highly controlled. As a result, the buildings and environments in the inner core have high standards. Furthermore, most of the transport links in the city end up in the inner core of the CBD, and therefore the development of the area is increasingly controlled hence high-quality land use in West bay. On the other hand, in the outer core, the land is not of high value, and hence there is limited control over the nature and standards of buildings. Also, as seen in figure 1, some parts of the outer core form a zone of discard. The zone of discard is a zone of the CBD that has been abandoned and is characterized by poor-quality structures and low-status shops hence a poor land use quality in Al Mansoura (Burdett, 2019). Also, within the outer core, there is the zone of assimilation with modern-quality residential structures and controlled development (Burdett, 2019). As a result, this zone has better land use quality since it was recently developed to modern quality standards. Therefore, Msheireb makes up the zone of assimilation with the best land use quality.

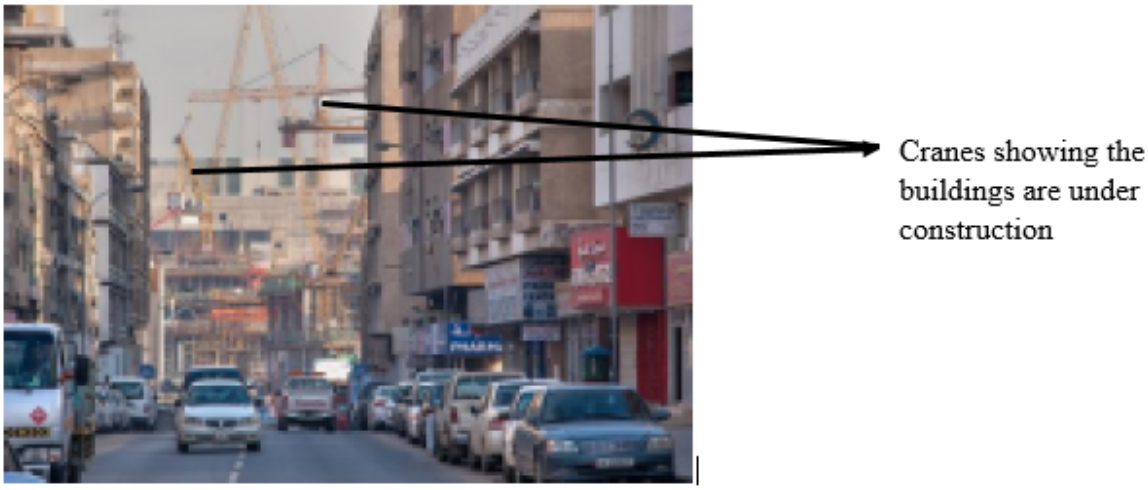
Ground Floor Use

Paces along	West bay		Al Mansoura		Msheireb	
Transe	**Left**	**Right**	**Left**	**Right**	**Left**	**Right**
0	Commercial	Commerci	Residenti	Office	Restaurant	Residential
20	Cafe	Commerci al	Mosque	Commercial	Car parking	Restaurant
40	Financial/Bank	Commerci al	Mosque	On-going construction	Residentia l	Residential
60	Retail/	Office	Gym	Restaurant	Spa	Commercial
80	Commercial	Commerci al	Warehous e	On-going construction	Mosque	Administrati ve
100	Hotel	Commerci	Hotel	Residential	Commerci	Office
120	Offices	Commerci	Residenti	Café	Commerci	Residential
140	Offices	Finance	Spa	Public administrati	Car dealership	Café
160	Commercial	Commerci	Residenti	Restaurant	Commerci	Office
180	Café	Commerci al	Residenti al/ retail	Bar/ restaurant	cafe	Residential
200	Metro station	Commerci al	Photo store	Residential	Outdoor seating	Open land

Table 1: Ground floor use

The table above shows the buildings' ground-floor use in the three data collection areas. The major uses identified were commercial use such as shops, supermarkets, convenience stores, and residential purposes. As seen in table 1, many of the buildings in

West bay are used for commercial purposes. Those in Msheireb are mixed for commercial and residential while Al Mansoura is mainly used for residential purposes. Furthermore, it is observed that Al Mansoura has several buildings under construction, as shown in picture 1 below.



Picture 1: Buildings in Al Mansoura Under construction

The inner core is the commercial and economic hub of the city. Accordingly, it is characterized by commercial buildings housing shopping malls, departmental stores, convenience stores, banks, and insurance companies, among others. As seen in table 1, West Bay which is the inner core, has many commercial buildings. Furthermore, the commercial buildings show that the zone is controlled and only certain types of businesses and economic activities can occur in the area. Msheireb, which is nearer to the inner core, has a combination of both commercial and residential buildings. However, the buildings in the area have mixed-use compared to those of west bay which means that the use of the buildings is less controlled. Al Mansoura has more residential buildings which align with the core frame model. Furthermore, the buildings have mixed-use, meaning they are not much controlled. Therefore, the use of the ground floor buildings in the three zones changes from commercial to mixed-use as the distance from the inner core increases.

Building Height

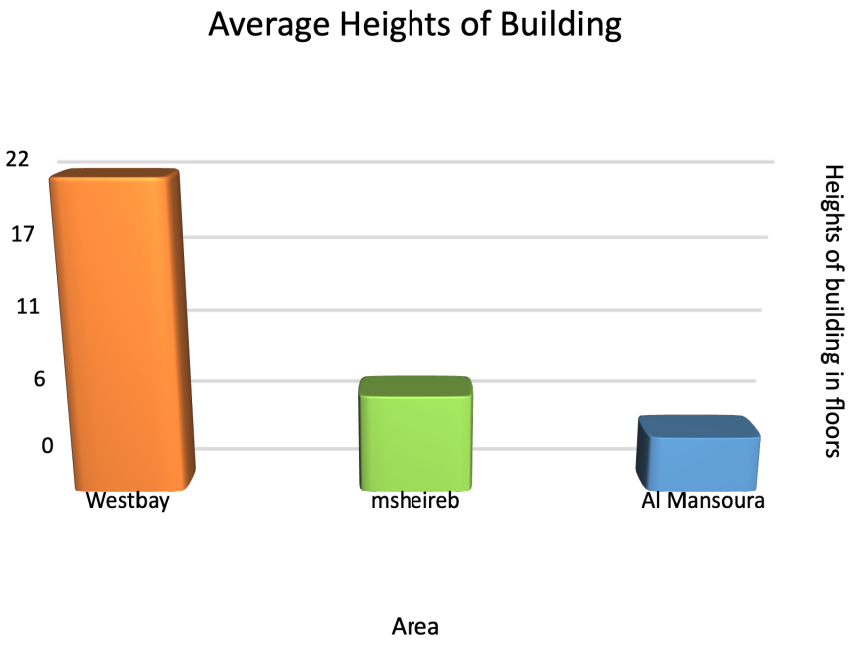


Figure 3: Heights of buildings in floors

Figure 3 shows the average heights of buildings in the number of floors. The number of floors was determined using approximation during data collection. Figure 3 shows that the buildings in Doha CBD are the tallest in West bay and the shortest in Al Mansoura. The buildings in Msheireb are of average height, taller than those in Al Mansoura but shorter compared to those in West bay.

Figure 1 shows that the heights of the buildings decline as one moves further away from West bay, the inner core of Doha CBD, going to the outer core, which aligns with the core frame model. The inner core has high-rise buildings because the land in the inner core is of high value compared to the outer core. Therefore, in the inner core, the development is done vertically to maximize the little available space. On the flip side, land in the outer core is of lower value; therefore, development is done horizontally, hence shorter buildings. Vertical development hence high-rise buildings, characterize the inner core,

while the outer core has a horizontal development hence shorter buildings, as seen in the pictures below.

Picture 2: Shorter Buildings in Al Mansoura

Picture 2: High-rise Buildings in West Bay

Traffic Flow

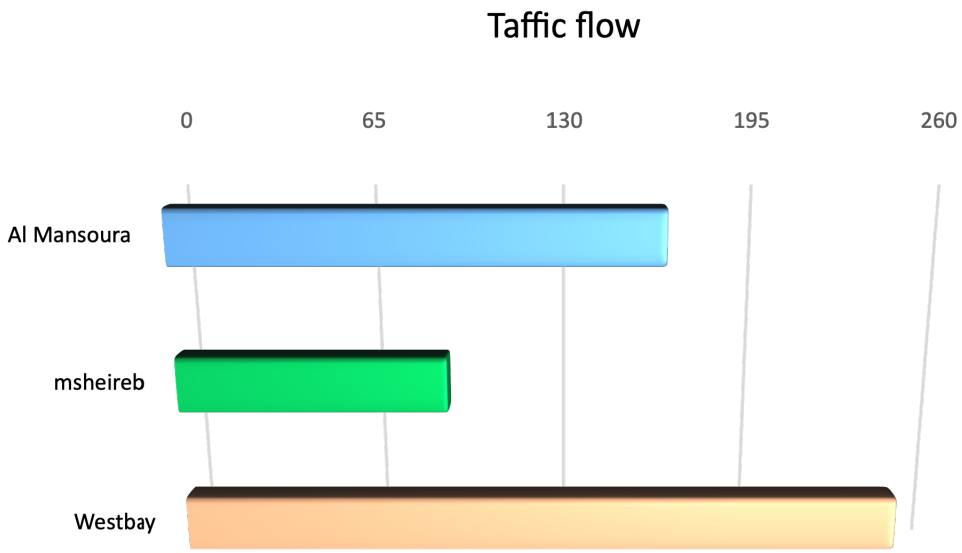


Figure 4: Traffic levels

Figure 4 shows that the traffic levels in Doha are highest in West bay and lowest in Msheireb. The traffic flow does not follow a uniform trend with increasing distance from the CBD because Al Mansoura, which is further from the CBD, has a high traffic level compared to Msheireb. The difference in traffic levels between Msheireb and Al Mansoura might be because Msheireb has modern residential buildings, which might be expensive, with low population and traffic movements. On the other side, Al Mansoura has low-quality buildings which might be cheap hence a high population and high traffic. However, figure 1 shows that the inner core has high traffic because all the traffic is directed there, as shown in map 3 below.

Map 3: Doha transport system (Al-Harami & Furlan, 2020)

Conclusion

Hypothesis 1:

The first hypothesis was that the number of floors of the buildings would decline with increasing distance from the inner core increases. Figure 3 shows that the heights of the buildings decline uniformly with increasing distance from the inner core (West bay) to the outer core (Al Mansoura). Accordingly, the hypothesis is confirmed.

Hypothesis 2:

The second hypothesis was that the traffic levels would be highest in the inner core compared to the outer core. The data analysis confirms this hypothesis because, as seen in figure 4, the traffic in the inner core (west bay) is higher than in Al Mansoura (Outer core).

Hypothesis 3:

The third hypothesis predicted that the ground floor use would change from commercial to residential as the distance from the inner core increases. Table 1 confirms this hypothesis

because the ground floors in West bay are used for commercial purposes, while those in Al Mansoura are used mainly for residential purposes.

Hypothesis 4

The last hypothesis predicted that the land use quality would decline as the distance increased from the inner core. Figure 2 shows that the land use quality does not uniformly decline as the distance from the inner core increases. Therefore the hypothesis is not confirmed.

Three of the four hypotheses were confirmed, showing that the different areas of Doha CBD have different characteristics and can be delineated.

Evaluation

The criteria used to collect the data were mostly objective, eliminating the possibility of biased results and untrue conclusions. A systemic sampling method was used during data collection. A systemic sampling method ensures that the true characteristics of the population have been captured. Therefore, the data collected represents the features found in the entire zone of data collection. However, limited information was collected from the fieldwork. Only four characteristics were used to determine if the CBD can be delineated, limiting the conclusions' accuracy. Furthermore, only one street in each zone was selected for data collection, limiting the data to only one road and not the entire zone.

To improve the data, more features of the CBD should have been investigated. For instance, the floor space index, functions of the zones, and the environment quality assessment could have been included to increase the accuracy of the findings. Also, the data should have been collected from at least two zones' major streets. The traffic levels could be different on different roads in the same zone; therefore, using more data collection points could have improved the accuracy of the results.

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Appendix: Fieldwork Data

Geography IA data collection

Table 1: AL Mansoura

Paces along Transect	Function Near Side	Function Far side	Height Near Side	Height Far Side
0	Residential	Office	4	2
20	Mosque	Commercial	2 buildings up	2 buildings up
40	Mosque	On-going construction	2 buildings up	2
60	Gym	Restaurant	2	5
80	Warehouse	On-going construction	6	3
100	Hotel	Residential	7	3
120	Residential	Café	5	3
140	Spa	Public administration	3	4
160	Residential	Restaurant	4	4
180	Residential/ retail	Bar/restaurant	3	6

200	Photo store	Residential	3	3

Table 2: Traffic Flow for 10 minutes

	Road Name & Direction	**Road Name & Direction**
Start Time: Finish Time:	Najma Street Right 9 am - 9:15 am RIGHT	LEFT
Lorry	11	9
Pick-up	23	26
Tanker	0	3
Bus	9	7
Car	86	92
Motorcy	9	11
Bicycle	11	8
Pedestria	13	10

Table 4: Land-Use Quality

Site Number &		
Category	Description	Points

Parking on side streets	Provision for cars to be parked off-road	Some off-road parking (5)	No off-road parking (1)	5
Landscape Quality	Mature Trees; well kept, plentiful grassed spaces (10)	Few trees; poor quality, unkempt grassed spaces (5)	Total, or almost total, lack of trees/grassed spaces (1)	1
Built Environment	Attractive, all construction completed to a high standard. Good quality materials and	Some drabness and construction are on-going in parts. Variable quality materials and build	Very drab, and much of the construction is incomplete. Poor quality materials and build (1)	1
Location:	MSHEIREB			
Street Name:	Al Kahraba Street			

Paces along Transect	**Function Near Side**	**Function Far side**	**Height Near Side**	**Height Far Side**
0	Restaurant	Residential	5	9

20	Car parking lot	Restaurant	4	8
40	Residential	Residential	9	10
60	Spa	Commercial	3	5
80	Mosque	Administrative	7	8
100	Commercial	Office	4	8
120	Commercial	Residential	6	7
140	Car dealership	Café	8	9
160	Commercial	Office	3	6
180	cafe	Residential	6	10
200	Outdoor seating	Open land	9	10

Table 2: Traffic Flow at the center of the transect (10 minutes)

	Road Name & Direction	**Road Name & Direction**
Start Time: Finish Time:	Al Kahraba Street 9:55am - 10:30am RIGHT	LEFT
Lorry	3	1
Pick-up	5	8
Tanker	0	0
Bus	7	3
Car	26	32

Motorcycle	6	11
Bicycle	7	13
Pedestrian	27	33
Other	N/A	N/A

Table 4: Land-Use Quality

Site Number &				
Category	Description			Points (1-3)
Parking on side	Provision for cars to be parked off-road	Some off road parking (5)	No off-road parking (1)	10
Landscape Quality	Mature Trees; well kept, plentiful grassed spaces (10)	Few trees; poor quality, unkempt grassed spaces (5)	Total, or almost total, lack of trees/ grassed spaces (1)	10
Built Environment nt	Attractive, all construction completed to a high standard. Good quality materials and	Some drabness and construction are on-going in parts. Variable quality materials and build	Very drab, and much of the construction is incomplete. Poor quality materials and build (1)	10

Location:	West Bay
Street Name:	Al Qassar, Al Dafna

Table 1:

Paces along	Ground floor Function Near Side	Ground floor Function Far	Height Near Side	Height Far Side
Transect		**side**		
0	Commercial	Commercial	32	38
20	Cafe	Commercial	14	33
40	Financial/Bank	Commercial	26	24
60	Retail/Residential	Office	45	44
80	Commercial	Commercial	36	45
100	Hotel	Commercial	8	31
120	Offices	Commercial	11	10
140	Offices	Finance	2	23
160	Commercial	Commercial	19	7
180	Café	Commercial	8	15
200	Metro station	Commercial	2	5

	Road Name & Direction	**Road Name & Direction**
Start Time: Finish Time:	Al Kahraba Street 9:55am - 10:30am	Al Kahraba Street 9:55am - 10:30am
Lorry	10	16
Pick-up	22	28
Tanker	2	3
Bus	23	17

Car	133	156
Motorcycle	24	18
Bicycle	3	1
Pedestrian	14	20
Other	N/A	N/A

TABLE 2:

Site Number & Location:	West Bay Al Kahraba Street, Al Dafna

Category	Description			Points (1-3)
Parking on side	Provision for cars to be parked off-road	Some off road parking (5)	No off road parking (1)	5
Landscape Quality	Mature Trees; well kept, plentiful grassed spaces (10)	Few trees; poor quality, unkempt grassed spaces (5)	Total, or almost total, lack of trees/grassed spaces (1)	10
Built Environment nt	Attractive, all construction completed to a high standard. Good quality materials and	Some drabness and construction on-going in parts. Variable quality materials and build	Very drab, much construction incomplete. Poor quality materials and build (1)	10