



**PA 01191/05**

**SLIEMA TOWNSQUARE**

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**ENVIRONMENTAL PLANNING STATEMENT: ADDENDUM  
COVERING THE PERIOD 2007-2015**

**Version 1: November 2015**



**Report Reference:**

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## Quality Assurance

**Sliema Townsquare**  
**Addendum covering the period 2010-2015**  
November 2015

**Report for: Townsquare Sliema Ltd**

## Revision Schedule

Rev	Date	Details	Report prepared by:	Checked by:	Approved by:
00	Nov 2015	Submission to client	<b>Krista Farrugia</b> Senior Environmental Consultant	<b>Rachel Xuereb</b> Director	<b>Adrian Mallia</b> Managing Director

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**Kappara Business Centre**  
**113 Triq Birkirkara**  
**San Gwann SGN 4197**  
**MALTA**

**Tel. / Fax: 21378172 - 77**

**Email: [info@adi-associates.com](mailto:info@adi-associates.com)**

**Web: [www.adi-associates.com](http://www.adi-associates.com)**

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## **I. INTRODUCTION**

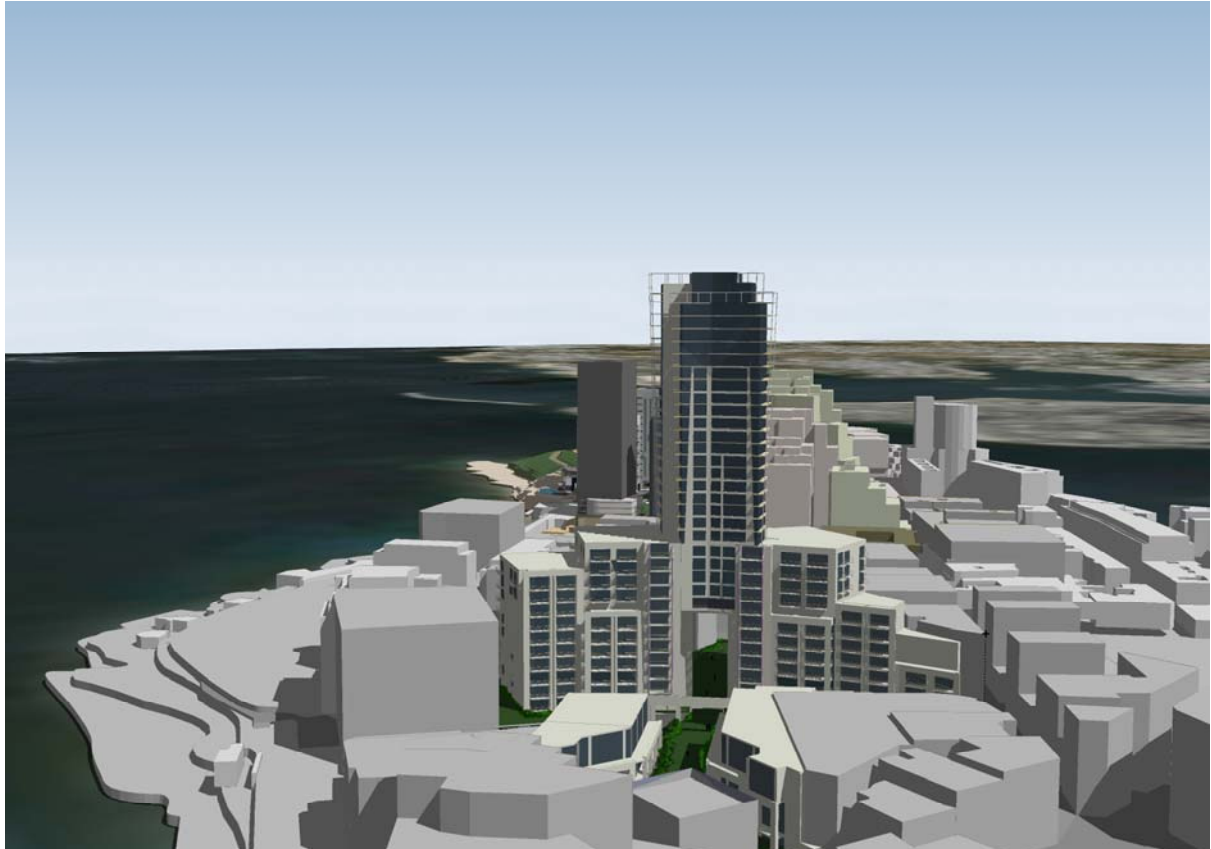
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- I.1. This document has been prepared subsequent to MEPA's requirement to prepare a consolidated document that contains all the reports that have been submitted to MEPA following the certification of the Environmental Planning Statement that was prepared in 2007 to assess the proposed changes for the development of Sliema Townsquare (PA 1191/05: *Construct mixed development which includes a) shopping avenue, b) commercial areas and residential units, c) underground parking and service facilities at Old Union Club, Hugh Hallet Street, Tigne' Street, Sliema*).
- I.2. This Addendum therefore contains the following documents:
1. Environmental Planning Statement Public Consultation Comments dated October 2007
  2. Update to the EPS prepared in 2010 that considers the change in height of the central tower from 32 storeys to 23 storeys, Block D raised from 4 to 7 storeys and Block G raised from 4 to 15 storeys;
  3. Update to the EPS prepared in April 2011 addressing air quality impacts from the amended proposal;
  4. Addendum to the EPS finalised in 2012 that comprises an air quality study;
  5. An EIA Screening letter dated August 2014 that addressed the proposed changes to the design of the Scheme including a 33 storey central tower; and
  6. An EIA statement dated September 2015 that addressed further changes to the Scheme including a 38 storey central tower.

## **Appendix I: EPS Public Consultation Comments prepared in October 2007**

**PA 01191/05  
SLIEMA TOWNSQUARE  
SLIEMA**

## **ENVIRONMENTAL PLANNING STATEMENT**



**PUBLIC CONSULTATION SUBMISSIONS**  
**October 2007**

*adi*  
**ASSOCIATES**  
ENVIRONMENTAL  
CONSULTANTS

**PA 01191/05  
Sliema Townsquare  
Sliema**

**Environmental Planning Statement  
Public Consultation Submissions**

**October 2007**

This report has been prepared by Adi Associates Environmental Consultants Ltd with all reasonable skill, care and diligence within the terms of the Contract with the client, incorporating our Standard Terms and Conditions and taking account of the resources devoted to it by agreement with the client.

We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.

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Adi Associates Environmental Consultants Ltd  
2<sup>nd</sup> Floor, BSL Centre  
B'kara Road  
San Gwann SGN 08

Tel / Fax: 2137 8172 – 21378177 - 21378180  
Email: [info@adi-associates.com](mailto:info@adi-associates.com)  
Web: <http://www.adi-associates.com>

adi  
ASSOCIATES  
ENVIRONMENTAL  
CONSULTANTS

**Comments from Public Consultation on the Environmental Planning Statement for the Construct Mixed Development which includes a) shopping hall; b) commercial areas and residential units; c) underground parking and service facilities at Old Union Club, Triq Hughes Hallet, Triq Tigné,**

**Sliema**

**PA 1191/05**

## **I. MRA COMMENTS**

<b>Page</b>	<b>Section/ Ref.</b>	<b>Comments</b>	<b>Consultants' Response</b>
<b>General comments</b>			
		Kindly indicate how the estimated demand for 5,700kVA was arrived at, including any diversity factors considered.	The original 5700 kVA has been reduced to 3903 kVA at a power factor of 0.96. Should the electrical equipment operate at a power factor of 0.9, which is the minimum figure allowed by the Electricity Supply Regulations, the peak power demand would be 4163 kVA. The estimate is based on detailed calculation of the power demand of the various buildings (residential, offices, retail, etc.) taking account of peak power demand parameters and the respective surface area in square metres. A diversity factor (listed as contemporaneity factor) was then applied for each building to take into account that in practice electrical equipment would not be running simultaneously at full capacity.
		What energy efficiency measures are being taken in the design of the complex and what energy savings are envisaged to be obtained from such measures?	Overhangs, recessed facades, etc as shown on the project drawings, and utilisation of appropriate glazing. For example, a double-glazed windows with a high performance external tint, a low-e coating, an argon gas fill and an aluminum frame can reduce cooling energy requirements by almost 65 percent.

Page	Section/ Ref.	Comments	Consultants' Response
			A single-glazed windows with a pyrolytic low-e coating and an aluminum frame can reduce cooling energy requirements by almost 45 percent.
		<b>Permanent Fuel Storage</b> Should the applicant be interested in installing a permanent fuel storage for Bulk LPG, the applicant should cater for such a space at design stage and allocate an adequate space, compliant with internationally approved guidelines.	Noted
		<b>Temporary Fuel Storage</b> Should the applicant be interested in installing a temporary fuel storage during the construction phase, the Directorate suggest that: <ul style="list-style-type: none"> <li>a. Fuel consumption is calculated beforehand in order to avoid unnecessary bulk storage;</li> <li>b. Fuel/Storage location should be decided following identification of any potential routes for pollution should containment fail;</li> <li>c. Fuel storage should be located away from site drainage system;</li> <li>d. Fuel storage area must be located in an area away from vehicle movement to prevent potential accidents;</li> <li>e. Fuel storage must be sited with an impermeable base with a bund to contain at least 110% of the maximum fuel capacity.</li> <li>f. Tanks are to be properly labelled as to its contents and capacity;</li> <li>g. A store of spill response material, such as absorbing sand, is kept on site. A sign indicating action in the event of a spillage and the location of the nearest spill response kit are also to be affixed;</li> <li>h. Fuel deliveries should be supervised by a competent person;</li> </ul>	Noted



## PUBLIC COMMENTS

Ref	Summary of Comments	Consultants' Response
<b>Aldo Portelli</b>		
	The Scheme will result in an exponential increase in pollution noise and disturbance.	The EPS assesses the impact of noise to be of major significance, emissions from vehicles to be of major significance, and the impact of dust to be of minor significance, which would not be significantly different from a "traditional" development.
	Maintains that the assessment of noise impacts should make reference to LN64 of 2002 and LN 193 of 2004.	As stated in the EPS, none of these is relevant. LN 64 of 2002 requires Malta to undertake noise mapping, and LN 193 of 2004 sets levels of emissions for equipment used outdoor. Neither provides guidance on the environmental impact of noise. The common standard is BS4142:1997; a standard that is recommended by MEPA.
	The EPS understates the visual impacts of the Scheme.	Impacts are assessed according to the criteria described in Chapter 11 of the EPS. These criteria were agreed with MEPA prior to the commencement of the assessment.
	The Scheme is contrary to Structure Plan Policies BEN 1 and BEN 2	This is discussed in Chapter 6 of the EPS.
<b>John Montague</b>		
	Noise levels are unacceptable.	The EPS assesses the impact of noise to be of major significance.
	Commercial activities should not be considered and not overlooked by bedrooms of adjacent apartments because of potential noise from air conditioners.	The Scheme will use super low noise spec air cooled water chillers on rooftop, with enlarged condensers and variable speed fans plus sound attenuation barriers.
	Tower block is not appropriate.	The FAR criteria apply to the Application Site.
<b>Sapienza &amp; Valentino obo various residents</b>		
	Set backs and back yards are required	This is not an EPS issue.
<b>San Roque Owners Association</b>		
	The Scheme is not in conformity with the North Harbours Local Plan in respect of height	Noted. The site has been identified by MEPA as suitable for the application of the tall buildings / FAR policy.
	No proper study of the impact of the increase in traffic on air quality.	Air Quality is addressed in Chapter 10 of the EPS. The impact is assessed to be of major significance, although most of the traffic routed through Ix-Xatt ta' Qui-Si-Sana will not be related

Ref	Summary of Comments	Consultants' Response
		to the Scheme.
	The traffic situation will be exacerbated by the Scheme, having regard to the additional development in the area..	The Scheme will result in additional traffic, however, the comprehensive assessment undertaken in the TIS indicates that the traffic arrangements proposed in the ADT Sliema Transport Plan are adequate.
	Increasing population will make matters worse in Sliema.	The same population would result from a traditional form of development.
	Infrastructure in the Tigné area is not sufficient to cater for the Scheme and other development.	The EPS indicates that the infrastructure is adequate.
	Light and privacy issues will result from the tower	Assessed in the EPS to be of minor to major significance.
	Traffic noise and construction / operation noise will severely affect residents.	Chapter 9 shows that construction noise is assessed to be major, traffic noise to be not significant, and operational noise is unable to be assessed because the land uses / activities have not been defined.
	Traditional development will not have the same impact.	The same dwelling density would result from traditional development. The Scheme is based on the FAR policy.
<b>Hallet Court Owners Association</b>		
	The Scheme is not in conformity with the North Harbours Local Plan in respect of height	Noted. The site has been identified by MEPA as suitable for the application of the FAR policy.
	The Application Site is designated in the Local Plan for hotel development.	The designation does not preclude other development.
	The Scheme must conform to NHH01 and the FAR policy.	NHH01 is further informed by the FAR policy. As described in the EPS, the Scheme conforms to the FAR policy.
	The proposed tower is close to abutting development	Noted, the separation distance is greater than that required by DC2007.
	Photos have been taken from advantageous places.	Viewpoints were agreed with MEPA. Please note that they must be at publicly accessible places.
	Sliema is barely visible from university	Viewpoint was included at the insistence of MEPA.
	Photo from Bighi doesn't show the Fortina tower etc.	The Fortina tower is not visible from a publicly accessible viewpoint.
	Photos are not as required by ToR	Please refer to addendum. They were all taken according to the ToR and sized for A4 paper as per the ToR, and as accepted by MEPA to be in accordance with the ToR.

Ref	Summary of Comments	Consultants' Response
	Introduction of other buildings masks the impacts of the Scheme.	It is fair, reasonable, required by MEPA, and best practice to include other committed projects when assessing impacts.
	The Scheme is not in accordance with the FAR Policy.	The FAR Policy specifically identifies the Application Site for tall buildings.
	The ToR require the external appearance to be assessed.	The external appearance is described in the EPS in Chapter 4 and in the photomontages of Chapter 11.
	The Scheme should be considered as an internal development	This is a not an EPS matter.
	Scheme is contrary to BEN1, BEN2 and the sanitary laws.	Compatibility with BEN 1 & BEN 2 is discussed in Chapter 6 of the EPS. Sanitary laws are not an EIA matter.
	The Scheme is contrary to Structure Plan Policy UCO6 and UCO10.	The Application Site is not in a UCA; these policies are not relevant. Chapter 8 addresses UCO7, which deals with scheduled sites.
	The EPS does not address effects on infrastructure.	Please refer to Chapter 4 of the EPS.
	The FAR policy should not be applied to the Application Site for reasons of overshadowing, overlooking and loss of privacy, and eventual demolition.	The FAR policy identifies the Application Site for tall buildings. Matters of overshadowing, overlooking and loss of privacy, are addressed in Chapter 12 of the EPS.
	The design of the Scheme is not congruent with the area.	Visual impact is assessed to be of major significance from viewpoints close to the Application Site on Triq it-Torri.
	The Scheme does not conform to DC policy re tall buildings	The FAR policy identifies the Application Site for tall buildings.
	The ToR require an air quality assessment as per Appendix III of the ToR.	Please refer to Air Quality Method Statement in Technical Appendix 2.
	Monitoring is required.	The need for monitoring is addressed in each of the EPS topic chapters as appropriate.
	Assessment of the impact of dust arising from the finishing of the Scheme is not addressed.	Please refer to Chapter 10 and the Environmental Management Construction Site Regulations.
	Assessment of the impact of vibrations is not addressed.	Please refer to Chapter 9; vibrations are addressed extensively.
	The EPS does not address the type of commercial activity.	The exact type has not been determined by the Applicant. However, the generic data available is sufficient to gauge traffic impacts. Please refer to the TIS.
	Traffic is chaotic in Triq Hughes Hallet. The residents' garage is accessed directly opposite the main entrance to the Plevna Hotel.	The EPA and the TIS assume that traffic (and all other laws) will be enforced. The hotel entrance is some distance from the garage entrance.
	There are no drop off points for the Scheme	This is intentional. All traffic must proceed to the car parks

Ref	Summary of Comments	Consultants' Response
		where it will be possible to alight.
	Morning traffic is greater than afternoon.	The TIS modelling shows that the PM peak is the greater.
	Ix-Xatt ta' Qui-Si-Sana is not closed to through traffic. The area will be subject to widespread rat running.	To all intents and purposes, it will not be a through traffic route until the ADT scheme is implemented and the MIDI tunnel is open. Rat running is not associated with access to properties in the area. Please refer to the TIS for the revised traffic circulation plan.
	Air quality on Ix-Xatt ta' Qui-Si-Sana will exceed the EU laws.	This is what the EPS shows.
	The EPS doesn't address parking.	Parking is not mentioned in the ToR. Please refer to the TIS.
	A green travel plan should be formulated and the Scheme made accessible to all.	Noted. Please refer to the TIS, which shows that the Scheme operates adequately without a GTP..
	The effects of wind on surrounding buildings has not been considered.	Please refer to Chapter 11 where the effects on streets and buildings are addressed.
	Shadowing will extend beyond the site in the morning and afternoon. The EPS does not address natural lighting issues.	Please refer to Chapter 11: shadow assessment. The ToR do not mention natural lighting.
	The EPS refers to American shadow codes, not European.	The EU does not address same.
	It is essential to carefully assess the impacts of tall buildings	Agreed, this is what the EPS does.
	The neglect of the area is not considered in the Social impact.	Please refer to loss of residential amenity in Chapter 12.
	Results of interviews carried out for the social impact assessment were omitted.	The outcome is discussed fully in Chapter 12.
	Protected trees will be removed.	MEPA has already agreed to their removal vide PA 00470/00.
	Changes in the housing market may affect the sales of apartments.	Noted
	High rise buildings affect residents of adjoining apartments in respect of privacy, views, lighting, and security.	These matters are addressed in Chapter 12 of the EPS.

## FAA COMMENTS

Page	Section	Comments	Consultants' response	FAA Response	Consultants' response
6	2.11	While it is true that monitoring of emissions during the operational	The assessment described in this EPS is scientific; it is based on	This answer does not address the problem of FUTURE flows and	The Air Quality modelling is described in Chapter 10

Page	Section	Comments	Consultants' response	FAA Response	Consultants' response
		phase of the project is not possible at EIA stage, FAA maintains that scientific assessment is a must, as it is not possible to assess the full impact of the project without an in-depth study of air quality levels related to traffic and any other emissions. The impact of the project on the residents does not end once the ribbon is cut.	traffic flows and emissions from the Malta vehicle fleet.	emissions. What models have been created to replicate this and assess results of traffic flows and emissions?	(pp 210 – 213) and in the Air Quality Method Statement. Future emissions are modelled for 2017.
12	3.5	Just as the assessment of efficient land use needs to take into account the requirement for certain types of dwellings, so accessibility is not just the existence of a road network, but the availability of roads that are not snarled up by gridlock, supported by good public transport, which is not the case at the moment.	Noted.		
13	3.11	The population decline due to ageing in Sliema is more than compensated by the influx of residents from other towns, with the result that Sliema is one of the most densely populated spots in Europe.	Paragraph 3.11 does not refer to population. However, the assertion is not borne out by the demographic data in Table 3.2.	Para 3.11 says: "the Scheme meets the policy aim to reverse the decline of the residential population within the North Harbours area by providing quality accommodation." Table 3.2 does not give the demographics of the North Harbour area, but the breakdown by age of the Sliema population. In fact 3.3 says: "statistics for 1994 – 2004,22	Census data shows that the population of Sliema dropped from 23,399 in 1957 to 13,242 in 2005.

Page	Section	Comments	Consultants' response	FAA Response	Consultants' response
				show that the population of Sliema to be static for the last 10 years" While the population of the North Harbour area may be declining in other towns, this is not the case in Sliema, therefore this development scheme is not justifiable on these grounds.	
15	3.22	The phrase "regeneration of inner cities" is normally used to describe development aimed at revitalizing run-down city core areas and providing for a shortage of housing stock or commercial premises. Malta's most thriving and up-market town, Sliema cannot be remotely likened to a depressed inner city area, and has a surplus rather than a shortage of housing/ commercial stock	This comment ignores the context of the sentence which refers to the recognition of the potential for high rise building developments as catalysts for the regeneration of inner cities.		
16 & 17	3.29 & 3.31	Given that the phenomenon described in the paragraph has already been going on for the last twelve months, it has already been noted that a significant percentage of the available capital has already been invested both in individual properties, as well as in projects like Midi, Pender Place, Fort Cambridge, Les Lapins (Ta' Xbiex seafront) and others. By the time the Townsquare Project is at a	This is speculation. Please provide the data to substantiate this assertion.	This assertion has been amply substantiated in the media which is reporting on the slowdown in the real estate market. Cif Independent on Sunday : <a href="http://www.independent.com.mt/news.asp?newsitemid=58242">http://www.independent.com.mt/news.asp?newsitemid=58242</a>	Noted. See below.

Page	Section	Comments	Consultants' response	FAA Response	Consultants' response
		stage that it can be presented to the market, the investing of undeclared assets will be largely completed. As such it would be rash and misguided to consider this as a sure source of investment funds.			
17	3.33	Not only is there already a glut of property on the Sliema-St Julians area, with estate agents reporting over 1,000 apartments available for sale in the area, but the price of apartments in the major projects is usually beyond the reach of the average Maltese salary.	Noted, but depends on the market segment targeted.		
19	3.36	With the latest developments planned for Midi project, as well as the most recent large blocks of apartments, MEPA staff have confirmed that the number of units permitted in Tigne is in excess of 1300. The sales forecasts of the Townsquare project have therefore to be considered in the light of this factor.	Noted. The EPS was not required to address the economics of the project.		
21	3.44	The Real Estate Forum held in April '07 reported that purchases of property by foreign buyers has dropped off significantly due to cheaper overseas property prices, especially in Eastern Europe, lack	Noted.		

Page	Section	Comments	Consultants' response	FAA Response	Consultants' response
		of concerted overseas marketing campaigns and perceived bureaucracy.			
21	3.45	The number of 'lifestyle' complex units that are coming onto the market within a relatively short space of time are likely to outstrip the demand for such property. As mentioned above, many lifestyle complexes are priced beyond the average Maltese earner, while a complex is not necessarily the automatic choice of foreign investors who may opt for more characteristic Maltese properties. Fort Cambridge cannot as yet be taken as a bench-mark for property purchases due to the fact that many of the units were so far bought at nominal sums with a view to on-plan re-sale.	The paragraph notes that the "Scheme will need to be supported by local investors or by foreigners". It does not use Fort Cambridge as a bench mark, but refers to the fact that the take up for Pender Place and Fort Cambridge is rapid.	Such assertions cannot be accepted at face value. Pender Place is targeting an less upmarket profile, with units starting at Lm46,000. Solid reference cannot be made to Fort Cambridge's rapid take-up	Please refer to recent press releases re Pender gardens asserting that 30% of Phase I has already been sold to foreigners. The accounts for GAP show that 130 apartments were sold within 6 months of the marketing launch of the project.
22	3.49	While it is undeniable that taller buildings enjoy better views, the fact is that it is only the occupant of the tower who will enjoy uncluttered views, as occupants up to about ten storeys will still be faced with other buildings. This view is also one-sided, highlighting the benefits to the occupants of the new buildings, while ignoring the occupants of existing buildings who will have their views blocked,	Noted. This chapter addresses demand for the Scheme, not its effects on others. The effects on views from nearby buildings and light are not required by the ToR. Chapter 12 addresses privacy.	Light in residences is a basic necessity. Why was this not included in the ToR?	Noted. Please refer to MEPA.



Page	Section	Comments	Consultants' response	FAA Response	Consultants' response
		<p>their light much reduced and their privacy drastically curtailed.</p> <p>Tall buildings also impede the element of outdoor life that a traditional building, with its garden or terrace can offer in a country where the climate favours time spent outdoors. Due to the demand for open balconies and terraces in Malta, developers are often reluctant to admit to the dangers of open balconies over 10 stories above ground, however these cannot be ignored. Tall buildings are socially isolating, especially for children and old people, who suffer from a greater sense of isolation in a tall building as an increased number of units results in diminished neighbourly relations. There is also the 'ghetto effect' to be considered, with gated communities looking down on their inferior surroundings both physically and figuratively.</p>	<p>Noted, please refer to Chapter 12.</p> <p>Disagree; please refer to Chapter 12.</p>	<p>Chapter 12 itself confirms this, in the experience of old people in present apartment blocks, let alone with the building of mega-blocks: "With so many new residents, older residents feel disoriented because, whereas in the past everybody used to know each other, the situation today is different. Today new residents mind their own business, have busy lifestyles and belong to a much younger generation. Hence, there are two distinct groups or sociospheres."</p>	<p>Noted, building style is not relevant to this argument.</p>
<b>Chapter 4: Description of Site and Scheme</b>					
26	4.9	Hughes Hallet Street is a quiet residential back-street, previously known for its access to the Union Club gardens. The top part of Hughes Hallet Street closest to	The traffic Impact Statement finds that the street will handle the traffic and the Sliema Transport Plan shows that it is to be one way.	The traffic Impact Statement is seriously flawed. Directing 4 roads to converge on one narrow junction which is already grid-locked by the present flow of	The traffic plan was formulated by ADT (by highly qualified traffic management specialists), and the TIS modelling

Page	Section	Comments	Consultants' response	FAA Response	Consultants' response
		the Townsquare entrance is particularly narrow and unsuited to the heavy traffic that this project will generate.		traffic, proves this. The TIS needs to be re-worked by a professional qualified in traffic management, unlike the person who prepared this TIS.	input assumptions were approved by MEPA and ADT prior to modelling and ADT and MEPA subsequently approved the results. The TIS was prepared by MEPA-approved traffic experts.
<b>Chapter 9: Noise Emissions and Vibrations</b>					
/	/	<i>Mitigation</i> – None is proposed. Residents are expected to shut their windows and stay indoors until the construction phase is over.	Noted.		
/	/	<i>Operational Noise</i> will depend on the activities carried out once the place is up and running. However most of the noise will be shielded by their own buildings and so should not affect residents of Hughes Hallet Street or Tigne Street.	Noted.		
/	/	<i>Traffic Noise</i> estimates generated by the project once operational is quoted only for the afternoon peak hour. The morning peak hours are known to have much higher traffic volumes and the omission of this information is dubious. In any case, the project will substantially contribute to the unacceptably high levels of background traffic noise. This will	Analysis in the TIS shows that PM peak traffic is the heaviest. The point is that the additional traffic will not affect the noise climate.	This is another point that calls into question the reliability of the TIS. While the majority of commuters and schoolchildren depart between 7-8.45am, the return is staggered from 1pm to 7pm, therefore it is impossible that afternoon is the peak hour. Any Sliema commuter can confirm this, and it further points to flaws in the TIS.	This will not be the case when Tigné development is operational.

Page	Section	Comments	Consultants' response	FAA Response	Consultants' response
		exacerbate an undesirable situation and therefore the effect cannot be termed as insignificant.			
/	/	<p>The traffic data only takes into account the projects with planning permission on the Peninsula, i.e. the MIDI project. Other projects as yet without planning permission, i.e. Fort Cambridge and the Qui si-Sana Car Park are not included, therefore the traffic counts must be grossly underestimated and misleading. Tigne's streets are already clogged with traffic.</p> <p>The expected increase in traffic caused by the three projects will inevitably lead to gridlock at Qui si-Sana seafront during peak hours and almost permanent gridlock in the narrow old side-streets.</p>	<p>The traffic data is based on a 2% growth in network traffic, plus Fort Cambridge, MIDI, and Qui-Si-Sana car park.</p> <p>This is contrary to the findings of the TIS Update.</p>	<p>The TIS is therefore denying the gridlock that occurs on a daily basis. Can it also deny that the increase of 1,400 apartments on the peninsula (data supplied by MEPA) will aggravate this situation?</p>	<p>The modelling shows that, by adopting the Sliema Transport Plan, gridlock will be alleviated.</p>
<b>Chapter 10: Emissions to Air</b>					
/	/	Construction phase - The study on Dust Emissions is limited to the excavation site itself. The EPS deliberately avoids mentioning any effect on neighbouring buildings and blithely assumes that no dust may be carried outside the site itself, which is contrary to Maltese construction experience and unsupported by data.	Please refer to paragraph 10.60.	The mitigation methods described were also imposed on the Fort Cambridge project. In spite of this, neighbours were choked with dust inside their residences. Residents could not open windows during the peak of Summer and pulmonary problems increased. Witnesses can be produced.	Noted. Noise impact is assessed to be major and dust minor.
/	/	Operational phase: The report	Currently lx-Xatt ta' Qui-Si-Sana	Traffic flows through Xatt ta' Qui	This is defined as rat

Page	Section	Comments	Consultants' response	FAA Response	Consultants' response
		repeatedly states that Qui-si-sana is closed to traffic. This is not the case. Access to Ghar id-dud and the Ferries is still open and Qui-si-sana is often used as an alternative route to relieve congested Tower Road. This statement is definitely misleading.	does not take through traffic.	si Sana constantly, passing through Hughes Hallet and Locker streets, down into St Anthony Street to reach the Ferries.	running traffic, which ADT's Sliema Transport Plan seeks to curtail.
/	/	Operational phase: Whatever the case, PM10 levels (particulate matter) generated by traffic on the Qui-Si-Sana seafront will be far above those permissible by EU law once the pedestrianisation of Bisazza Street comes into effect. The report admits that the Development will exacerbate the situation, thus having a major effect on the health of Qui-Si-Sana residents.	Noted. The effect occurs regardless of the project.	Is that justification to make it worse? This line of reasoning is very worrying.	Please refer to paragraph 10.58, which indicates that the increase in PM10 will make it more difficult to meet the air quality limit values.
/	/	Operational phase: Again the excuse that traditional development would have the same effect is used - this is invalid as this type of development would equally require an EIA.	Traditional development would not require an EIA.	Traditional development could require an EIA through Annexe III	The need for an EIA would depend on the way in which the developer breaks up the site.
<b>Chapter 11: Building Performance: Wind Shadow, and Visual Amenity</b>					
/	/	<i>Wind and shadows:</i> There is no perceived effect of wind on the surrounding area. If anything, a shielding effect is expected. While it is true that shadowing		The Sanitary Laws are not being imposed at the present time. The residents' interests have a right to be protected.	Noted

Page	Section	Comments	Consultants' response	FAA Response	Consultants' response
		with be limited to the project's footprint for part of the day, this is not true of early morning and late afternoon shadows which will stretch well beyond the project perimeters. Furthermore there is no mention of the deterioration of the quality of natural light on adjacent residences.	Assessment of light penetration to third party property is not required by the ToR. This is addressed by the sanitary laws.		
		<p><i>Visual Amenity.</i> This will have an adverse impact on the skyline. Some of the visual montages are highly selective and misleading.</p> <p>The shot from Bighi has been taken in such a way that not even the Fortina Tower is visible, whereas in fact it towers over Valletta's bastions, as will the Townsquare tower, irremediably impacting Valletta's World Heritage skyline. Sliema is barely visible from the shot taken from the University Library.</p>	<p>Noted. The viewpoints were agreed with MEPA. Please note that the viewpoints must be from a public place. This is the view from the publicly accessible area. (There is a void space between the viewer and the beam across the centre of the photo.) Valletta is not viewable from publicly accessible areas in the vicinity. Agreed. The viewpoint is not within the library, but on the public square between the library and the canteen, as suggested by MEPA.</p>		
<b>Chapter 12: Social Assessment</b>					
		This report seems fair and impartial. It fails to mention the systematic official neglect leading to the deterioration of Qui-si-Sana	Noted.		

Page	Section	Comments	Consultants' response	FAA Response	Consultants' response
		garden and its subsequent reduction of use.			

## TIGNÉ AND QUI-SI-SANA RESIDENTS ASSOCIATION

Comments	Consultants response
<b>Inappropriate Justification</b>	
<p>The EPS provides insufficient evidence for the need of the proposed project.</p> <p>With other large multi-use establishments in the small stretch of land that is the Tigné peninsula, there is nothing that the proposed Townsquare development can bring to the area that is not already provided for by other projects.</p> <p>In particular, much emphasis is placed on the 'public open area' included in the project, so much so that this is the basis of the project's name, however the open area described is hardly enough to justify a project of this scale.</p>	<p>By certificating the EPS, MEPA deemed otherwise.</p> <p>Not a matter for the EIA to address. This is a risk that the applicant takes.</p> <p>The EPS does not justify the project on the basis of open space. It does note, however, that the open space arises from the application of the FAR concept.</p>
<i>EPS Page 15, Section 3.22:</i> The term 'inner city area' is a derogative phrase normally used to describe the poorer parts of a city. The Sliema area cannot realistically be compared to an inner city area.	"Inner city" is not a derogatory term but a standard geographical expression.
<i>EPS Page 17, Section 3.31:</i> This is hardly a reliable source of investment and is based on outdated information. The Central Bank of Malta quarterly Review 2007:2 described how monetary growth during the first quarter of 2007 was driven by an increase in domestic credit, which, in turn, continued to be fuelled by additional lending to households for house purchases and to the real estate, renting & business activities sector. This shows how the investment scenario described in the EPS is now well advanced and will have finished taking place by the time the project in about five years time.	Noted. But at the time of writing it was appropriate, particularly in view of the fact that many of the dwellings in the recently approved high rise schemes were sold within days on going to the market... on plan.
<i>EPS Page 13, Section 3.11:</i> The Sliema area has a high number of vacant dwellings, also the price of these major projects is likely to be out of the reach of the average Maltese salary and therefore the proposed scheme does in not contribute towards this policy.	The policy does not address affordability
<i>EPS Pages 42, 43 – Alternatives:</i> There is no clear description of the alternatives considered and reasons why the current design layout was chosen. Also, there is no 'zero option assessment' considerations as requested in the Terms of Reference for the EPS.	Four schemes are described through text and plans. Reference to the "zero option" is not relevant since the former use has been demolished and

Comments	Consultants response
	the continuation of a derelict site is not acceptable.
<p><i>EPS Page 123</i>  <i>LN 163 2002 Whereas it is acknowledged that the Scheme will attract a number of vehicles, it is also true that the number of vehicles in Malta will not increase as a result of the Scheme. This implies that the national level of emissions from vehicles will not be affected by the Scheme.</i></p> <p>If the scheme is highly dependent on foreign investment, then this could result in an increase in the number of vehicles in Malta as a result of the Scheme.</p>	The increase arising under such a scenario will not affect emission levels.
<p>Information Lacking  Safety issues relating to the high rise component, such as fire, natural disasters and other emergencies, are not tackled. The fact that open balconies are proposed over ten stories above ground surely raises safety issues with social repercussions.  One also has to wonder whether the Civil Protection Department – whose fire engines can only reach as high as the 8<sup>th</sup> floor - is equipped to deal with any kind of emergency in a building of this size.</p>	These are not matters for an EIA.
Visual Assessment	
<p><i>EPS Page 14, Section 3.15: While this is true, the Draft policy also states that tall buildings should not be built in areas within or in close proximity to views of protected areas. In fact, the site in question falls in a view corridor for the Strategic View point from Valletta. The North Harbour Local Plan states that these view corridors, including the building planes and skylines should not be significantly disrupted by new development, especially high buildings. The draft FAR policy goes on to describe: 'Policy 2.10 (A) prohibits the application of the FAR on sites smaller than 3,000m<sup>2</sup>, in Urban Conservation Areas, in areas zoned for detached/semi-detached dwellings and in other urban areas where it is important that the height limitation is not exceeded or the urban fabric is such that development of a mass or height which would be permissible using the FAR would be out of character with the existing area, or would lead to overshadowing, overlooking or loss of privacy.'</i></p> <p>Yet another reason why the site is not a suitable location for a building of this kind is the fact that it violates the following section of the FAR policy: 'Tall buildings should be sited where visual impact on sensitive historic environments and their settings such as World Heritage Sites, conservation areas and listed buildings is minimised, and should retain and enhance key strategic, long distance views and important vistas at a national and at the local level.'</p>	<p>Noted. However, the view from the point in Valletta (see Map SE2 of the Local Plan) is blocked by Manoel Island.</p> <p>Please note that the draft FAR policy specifically identifies the application as suitable for tall buildings.</p>
<i>EPS Page 43, Section 3.22: Proposal 5 – the Scheme changed from Proposal 3,[...] This is the Proposal that is</i>	See above.

Comments	Consultants response
<p><i>being assessed in the EIA.</i></p> <p>The figures do not show a 'gradual step up'. The tower dwarfs all other buildings below it, including Villa Drago.</p>	<p>That's a matter of opinion.</p>
<p><i>EPS Page 78, Section 4.5.2.:</i> The ToR clearly state that these are to be included in the EPS. This is essential information at this stage, as it will affect the magnitude of the impact of the project and hence its feasibility. Also the high standard of design is required by the FAR regulations.</p>	<p>Such information is generally not available at the ODP stage.</p>
<p><i>Page 263, section 11.47:</i> The point of the landscape characterization is in fact precisely to assess the impact of the Scheme on the landscape.</p>	<p>Agreed, but not on the visual amenity.</p>
<p><i>Pages 273 – 283 - Photomontages</i></p> <p>Photos do not show the date when the base photograph was taken nor the height from which the photo was taken as stated in the ToR.</p> <p>Finally many of the photos have been taken from selected points and are deliberately misleading. This is unacceptable when one considers the highly significant visual impact that this project will have.</p>	<p>See addendum</p> <p>The photos are representative views, taken in accordance with MEPA's requirements, IEMA / Landscape Institute's Guidelines and in accordance with best practice.</p>



Comments	Consultants response
 <p><i>Page 274, Section 11.75:</i> The angle selected for that photomontage deliberately places the Scheme behind a lamppost. This plays down the visual impact at that location.</p>	<p>This is not deliberate.</p>
<p><i>Page 275, Section 11.76:</i> It is misleading and incorrect to include in the photomontage of the site before the Scheme, the Fort Cambridge development since the permit for this development has not yet been approved.</p>	<p>The permit has been approved as ODP; the EPS is obliged to include such commitments.</p>
<p><i>Page 282, Section 11.83:</i> Villa Drago is in fact part of the site itself, this viewpoint is redundant and not a real representation of the view to the South. In particular, a viewpoint from street level facing the tower would have provided a far more realistic picture of the visual impact of the project from close proximity.</p>	<p>The viewpoint was agreed by MEPA. A view further towards the west would not have shown the tower... it is blocked by buildings.</p>
General Nuisance	
<p><i>Page 6, Section 2.11:</i> One of the objectives of the EPS is to identify the impacts, their significance and hence justify mitigation measures. The ToR for the EPS clearly states that Air Quality is to include: 'emissions to air during demolition, construction and operation by source, type quantify, composition and concentration and the distribution of each.'</p> <p>In view of the cumulative impact assessment monitoring of changes to air quality arising from operations should still be carried out. Also for monitoring traffic emissions (see Traffic section below).</p>	<p>For the reasons explained in the EPS, monitoring that will determine the impacts of the Scheme alone is not possible.</p>
<p><i>EPS page 34, Section 4.23:</i> This very brief reference to neighboring projects acknowledges their significance to the project. However, the EPS fails to address the cumulative issues and does not make any reference</p>	<p>"Cumulative" refers to the cumulative effects of the various impacts arising from the Scheme,.</p>

Comments	Consultants response
as to how the proposed scheme may aggravate the combined impacts.	
<i>EPS Page 78, Section 4.5.2:</i> The ToR clearly states that these are to be included in the EPS. This is essential information at this stage, as it will affect the magnitude of the impact of the project and hence its feasibility. The reason given for not providing such information is weak at best.	See above comment on same para.
<i>Page 89, Section 4.72:</i> Here the obligations of the developers are not included and the competent authority not identified.	They don't have to be.
<i>Page 95, Section 4.1.06:</i> Current 'green' technology for buildings of this size exists and is feasible. For some years now, designers have been incorporating design elements within new structures to take advantage of natural energy sources, reduce energy wastage and incorporating design elements to increase energy efficiency in buildings. The fact that the EPS states that it will not be possible in this case suggests a grave shortcoming in the building's design.	Please refer to paras 4.57 – 4.59.
<i>Page 193, Section 9.34:</i> Baseline vibration measurements would have been an important indicator of the Scheme's impact on the area. Also with other major construction activity nearby, the ambient vibration levels are likely to be much higher than typical urban locations. Without an adequate baseline to compare to it is not possible to assess vibration impacts.	Please refer to para 9.58 and footnote 81.
<i>Page 193, Section 9.35 &amp; Page 193, Section 9.37:</i> The fact that residents will most likely continue to be inconvenienced by noise once the project is in operation is no small impact and should not be brushed over. Furthermore, since the eventual activity mix is as yet unknown, predictions could still be made on a worst-case-scenario.	Please refer to paras 9.46 – 9.48 re operational noise. The approach taken is acceptable to MEPA. The issue of operational noise will be addressed at FDP stage.
<i>Page 194, Section 9.39:</i> This is once again a serious issue when one considers that many nearby residents are senior citizens who may feel threatened to leave their houses during the construction phase due to unbearable living conditions for a prolonged period of time.	Noise impact is assessed as major. See para 9.44 and Table 9.8. The disturbance would be the same for "traditional development."
<i>Page 211, 10.16:</i> The impact of traffic on air quality was highlighted as having a major significance, yet no mitigation measures were proposed in table 10.4. See further comments in Traffic section below.	That is because the majority of emissions are from traffic on the network.
<i>Shadow and Wind Quality Assessments</i> These are significantly lacking in information on third party sensitive receptors. The data gathered described the situation likely to arise on the site itself. This information is not adequate and needs to be updated to include third party property. In particular the only mention of nearby property for the wind studies involves stating that neighboring buildings will provide a shielding affect. Also the existing Qui-si-sana beach area used for recreational purposes will be severely affected by the	Both wind and shadow address third party property. See for example Figures 11.13 and 11.14 re wind and Figures 11.16 to 11.27 re shadow. The impacts of shadow, in accordance with best EIA practice, only have regard to impacts on public spaces. The beach is already in shadow as a result of the

Comments	Consultants response
proposed scheme. The proposed tower block will create a heavy shadow on this popular beaching area at the detriment of the residents, visitors and general public. This aspect has not been considered in the EPS and is seen as a significant shortcoming in the assessment.	coastal development, the Scheme will not affect it further. See para 11.44.
Page 253, 11.35: It is not clear why the San Francisco Planning Code was used, (considering that San Francisco City bears little if any similarities to Tigné). A European City Planning Code would have been more appropriate.	Planning codes are much the same throughout the world, and the SFPC is particularly comprehensive.
Page 255, Section 11.40: It is not sufficient to simply state this. The ToR clearly required the shadow assessment to determine 'the extent of the shadow of the proposal which will be cast over surrounding third party property clearly distinguishing between seasonal differences.'	See reply two sections above.
Page 255: The Qui-si-sana gardens are 'public open space' in the vicinity of the area. Clearly this would have qualified as a <i>sensitive receptor in the vicinity</i> .	Ditto
Page 299, 12.41: The Social Assessment highlights the fact that it is simply not acceptable to suggest that nearby residents of the project will have to be forced to remain indoors with windows closed for 54 months. This however is not picked up in other assessments, in particular the Noise and Air Quality sections. Apart from not assessing this element, the EPS lacks mitigation measures as to how to minimize this detrimental affects.	Please refer to para 9.39.
<i>Social Assessment</i> This did not include a summary of the interviews with nearby residents which would have been an important component.	The interviews are used throughout the SIA.
The social assessment raises many important detrimental effects but few mitigation measures were proposed. Any residual impacts warrant compensation.	Noted.
<b>Alien Development</b>	
Page 30 Figure 4.4 The removal of several protected trees is proposed. 56% of the trees in the ground are scheduled to be removed, this is hardly in keeping with the 'increase in open space' so fervently advertised as an integral part of the project. With a more thoughtful approach, these trees can be incorporated in the design.	Noted.
The gardens form part of the curtilage of Villa Drago. As Villa Drago is a Grade I scheduled building then any demolitions or harmful alterations are not allowed neither on the building nor on the curtilage.	Please refer to para 1.10
<b>Traffic</b>	
3.25 The demand for the Scheme focuses on the three principal components' residential, offices, and commercial.	Please refer to the TIS.

Comments	Consultants response
The EPS does not discuss the issues of parking demand as stated in the TOR.	
Page 16 describes the other projects in the area and states that <i>'the assessment of traffic in the Tigné area in this Update includes the traffic generated by the foregoing projects'</i> . Whilst such a statement is made, the TIS provides no further information on the breakdown of the traffic impacts of the other projects. This data would be necessary to have a clear indication of the separate and compounding affects of the projects.	The TIS does exactly this. It details the build up of traffic for each project and the network. The EPS assesses the environmental impact of the traffic from all development and the network.
Page 221 section 10.62 of EPS: This statement that traditional development would result in the same amount of traffic (and hence pollution) in the area conflicts with other statements in the EPS which suggest that there will be shoppers and visitors to the Scheme. Also, besides the commuters, the EPS suggests a worst case overnight population of 900, although a more likely estimate was 569. This is a substantial increase, especially when one considers that the quality of the air in that area is already poor.	The traditional development of the scheme would also include all basements and commercial activities.
EPS Page 6, 2.11: Such statements give the false impression that deterioration in quality of air is not an issue.  MEPA's <i>State of the Environment Report, 2006</i> already show that NO <sub>2</sub> levels for the Sliema area are on the EU annual limit value of 40µg/m <sup>3</sup> . This means that any addition in traffic, even by a very small factor, will undoubtedly exceed this annual maximum limit. One therefore fails to understand how the EPS readily dismisses such a significant issue as the quality of air arising from traffic.	Long term deterioration of air quality is an issue, but the deterioration is only minutely related to the Scheme. The main culprit as noted in the TIS and the EPS is network traffic.
EPS 3.5 <i>The application site is located in the heart of the Sliema urban area and is easily accessible through the existing road network.</i> This statement is misleading as it ignores the controversial ADT traffic scheme being proposed in the immediate area. The notion of easy accessibility remains unsubstantiated. The existing road network is already saturated and when potential traffic generated by the nearby Midi Developments project and the proposed Fort Cambridge are considered, it is questionable whether the area remains <i>easily accessible through the existing road network</i> .	The TIS demonstrates very clearly that the Scheme is easily accessible.
EPS Page 210, 10.11 : The mention of <i>'little traffic'</i> is not quantified and therefore not of use. Secondly, the EPS needs to show whether the traffic might have been reduced due to the fact that the peninsula is closed off due to the MIDI project.  Finally it is not understood why meaningful results from monitoring cannot be obtained when MEPA's <i>State of the Environment Report, 2006</i> already show that NO <sub>2</sub> levels for the Sliema area are on the EU annual limit value of 40µg/m <sup>3</sup> .	It doesn't need to be quantified – there is very little traffic using Ix-Xatt ta' Qui-Si-Sana at the moment; the EPS does need to demonstrate that the road closure resulting from the MIDI project is the reason. The MEPA data is not specific to the Application Site or Ix-Xatt ta' Qui-Si-Sana.

Comments	Consultants response
Conflict with Policy	
<i>EPS page 14, Section 3.15:</i> As highlighted in section one, the site in question falls in a view corridor for the Strategic View point from Valletta. The North Harbour Local Plan states that these view corridors, including the building planes and skylines should not be significantly disrupted by new development, especially high buildings.	See reply to same comment on <i>EPS page 14, Section 3.15</i> above.
<i>Page 79, Section 4.5.6:</i> The EPS is meant to identify exactly where and how these standards are to be adopted. This is not done	These will be addressed in the FDP.
<i>EPS Page 126 Policy BEN 1:</i> As the Project does in fact have a deleterious impact in practically all of the ways mentioned here, it can be argued that the Project will be in direct violation of this policy.	Noted. Please refer to para 6.36.
<p><i>Consultants' Declarations</i></p> <p><i>Adi Associates Environmental Consultants Ltd prepared this Environmental Planning Statement in association with the specialist consultants listed below:</i></p> <ul style="list-style-type: none"> <li>• Geology &amp; Hydrology - Dr Saviour Scerri</li> <li>• Noise - Mr. John Demanuele (Mediterranean Technical Services Ltd)</li> <li>• Social - Mr. Steven Vella</li> <li>• Wind - Rowan Williams, Davies &amp; Irwin (Anemos) Ltd W. Pearce, P Freathy, E. Palombi</li> </ul> <p>There are no consultants declarations signed for Cultural Heritage, Air Emissions or Shadow Studies or Visual Assessment. This is a shortcoming on the validity of the EPS.</p>	These were undertaken by Adi Associates Environmental Consultants Ltd.
<i>EPS Page 94, Section 4.104:</i> There is no mention of possible local treatment of wastewater/sewage or re-use of treated greywater for flushing systems as sated in the ToR. This is a shortcoming in the EPS	They are not proposed by the Scheme, so the EPS cannot assess them.

**Appendix 2: Update to the EPS prepared in 2010**

PA 01191/05  
SLIEMA TOWNSQUARE  
SLIEMA

# ENVIRONMENTAL PLANNING STATEMENT

UPDATE TO  
Version 1: June 2007

adi  
ASSOCIATES  
ENVIRONMENTAL  
CONSULTANTS

**Report Reference:**

**Adi Associates Environmental Consultants Ltd, 2010. Sliema Townsquare. Update to the Environmental Planning Statement prepared in support of development permit application No. PA 01191/05. San Gwann, February 2010; iii + 53pp + 1 Appendix.**

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PA 01191/05  
Sliema Townsquare  
Sliema

Environmental Planning Statement  
Update

Prepared for the Applicant  
by  
Adi Associates  
Environmental Consultants Ltd

February 2010

This report has been prepared by Adi Associates Environmental Consultants Ltd with all reasonable skill, care and diligence within the terms of the Contract with the client, incorporating our Standard Terms and Conditions and taking account of the resources devoted to it by agreement with the client.

We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.

This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies upon the report at their own risk.

Adi Associates Environmental Consultants Ltd  
2<sup>nd</sup> Floor, BSL Centre  
B'kara Road  
San Gwann SGN 4197

Tel / Fax: 2137 8172 – 21378177 - 21378180  
Email: [info@adi-associates.com](mailto:info@adi-associates.com)  
Web: <http://www.adi-associates.com>

adi  
ASSOCIATES  
ENVIRONMENTAL  
CONSULTANTS

# 1. INTRODUCTION

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## PURPOSE OF EPS UPDATE

- 1.1. An Environmental Planning Statement (EPS) was prepared on behalf of Townsquare Sliema Ltd, to support planning application PA 01191/05 for the redevelopment of the former Union Club site in Sliema into a high rise residential and office complex with shopping / food and beverage / leisure facilities and parking. Planning application PA 01191/05 was validated by the Malta Environment & Planning Authority (MEPA) on 21<sup>st</sup> March 2005. The EPS was certified by MEPA in August 2007 and submitted for public consultation in September 2007.
- 1.2. Following detailed discussions with MEPA the Applicant has changed the building heights of the development. This EPS Update is being submitted to assess these changes. A new project description is provided together with an assessment of impacts related to visual, shadowing and wind.

## PROJECT CHANGES

- 1.3. The project has been changed as illustrated in **Figure 1.1** to **Figure 1.3** and summarised as follows:
  - The central tower, T, which rose to 32 storeys has been reduced to 23 storeys;
  - Block D, located northeast of the principal avenue has been raised from 4 to 7 storeys; and
  - Block G, located southwest of the principal avenue has been raised from 4 to 15 storeys.
- 1.4. This change is supported by MEPA's draft Planning Policy on the Use and Application of the Floor Area Ratio. The low buildings close to Villa Drago gradually step up to the residential towers in the southwest and southeast corner of the site.

Figure 1.1: Block Plan



Figure 1.2: Transverse section

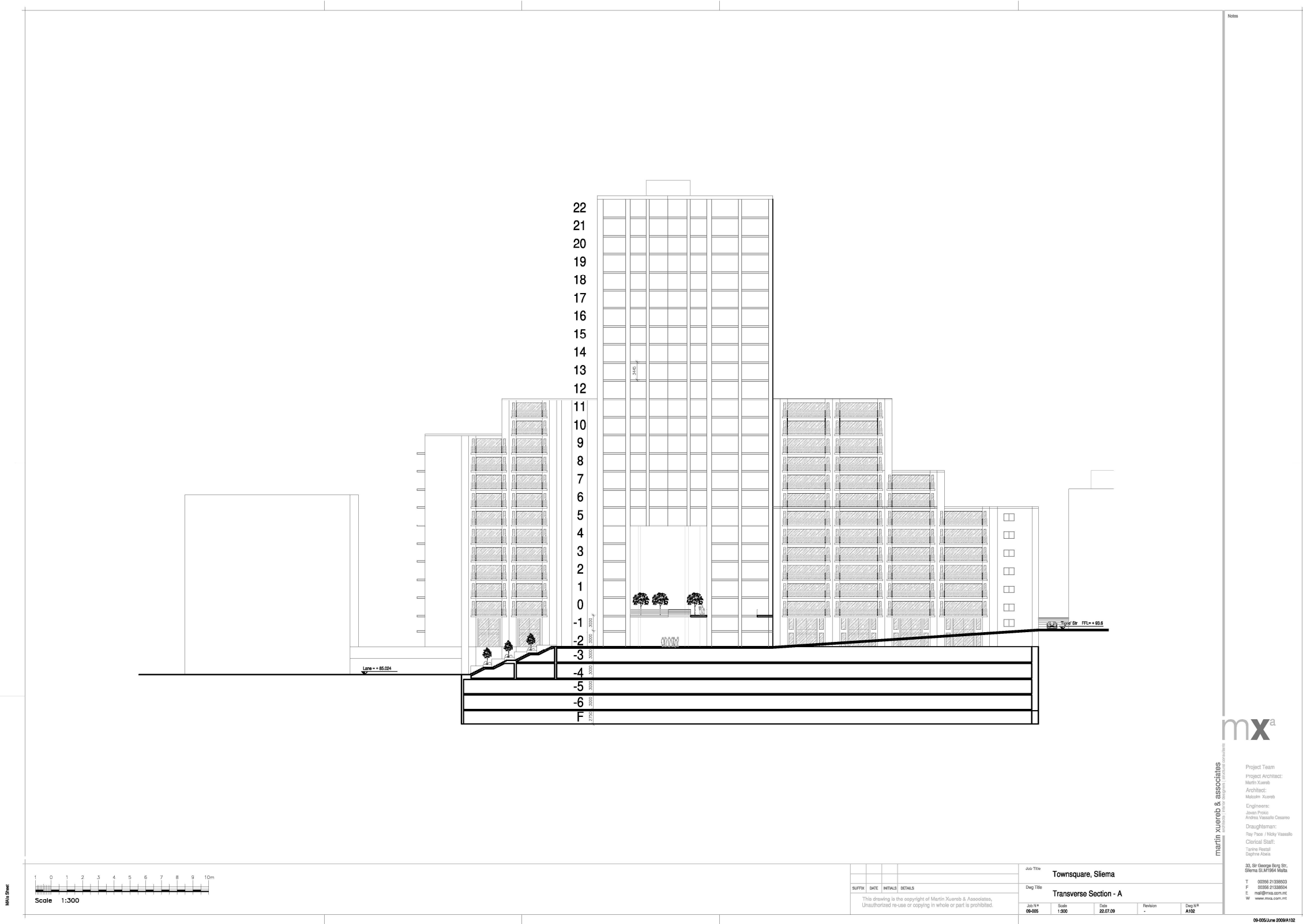
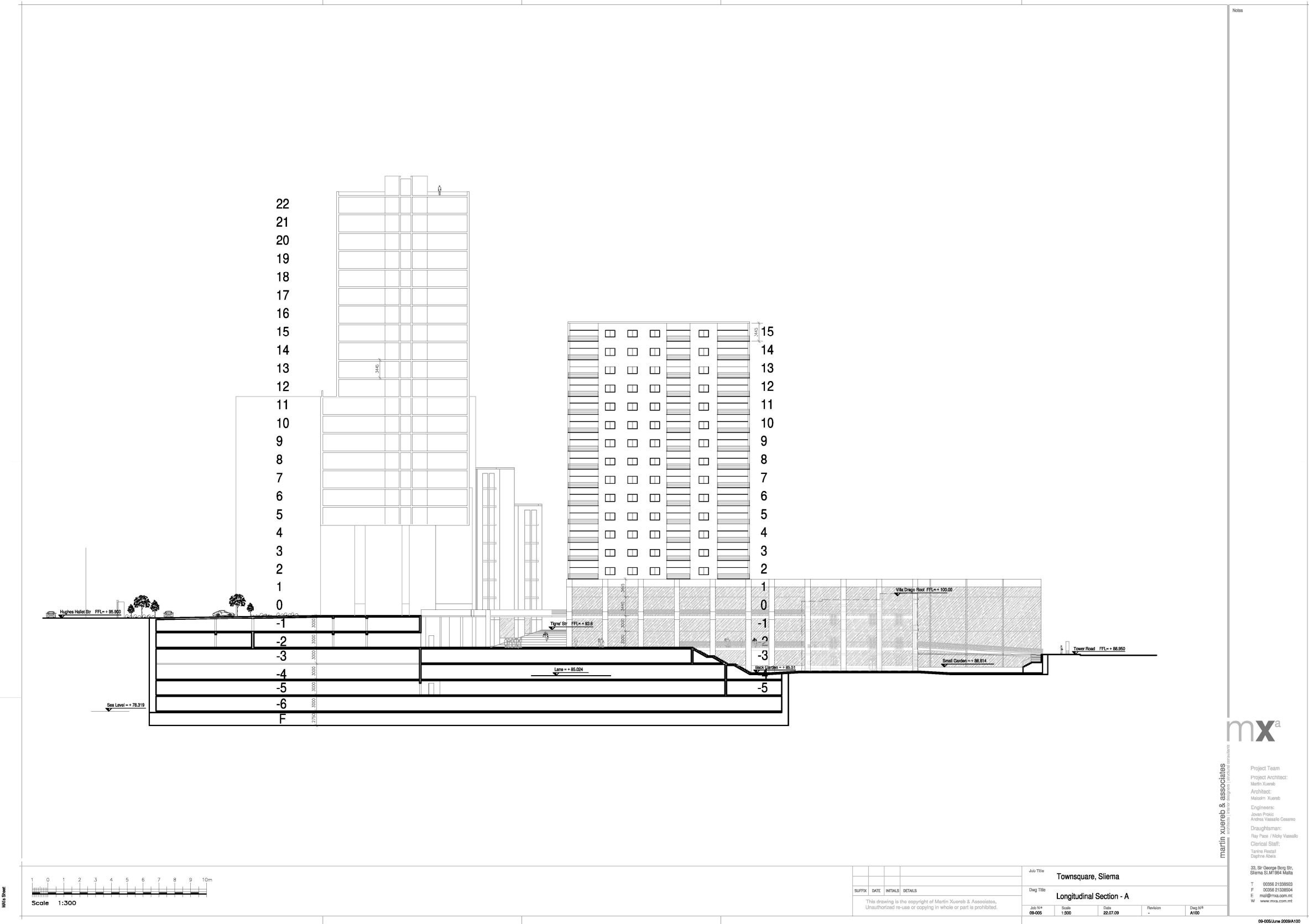
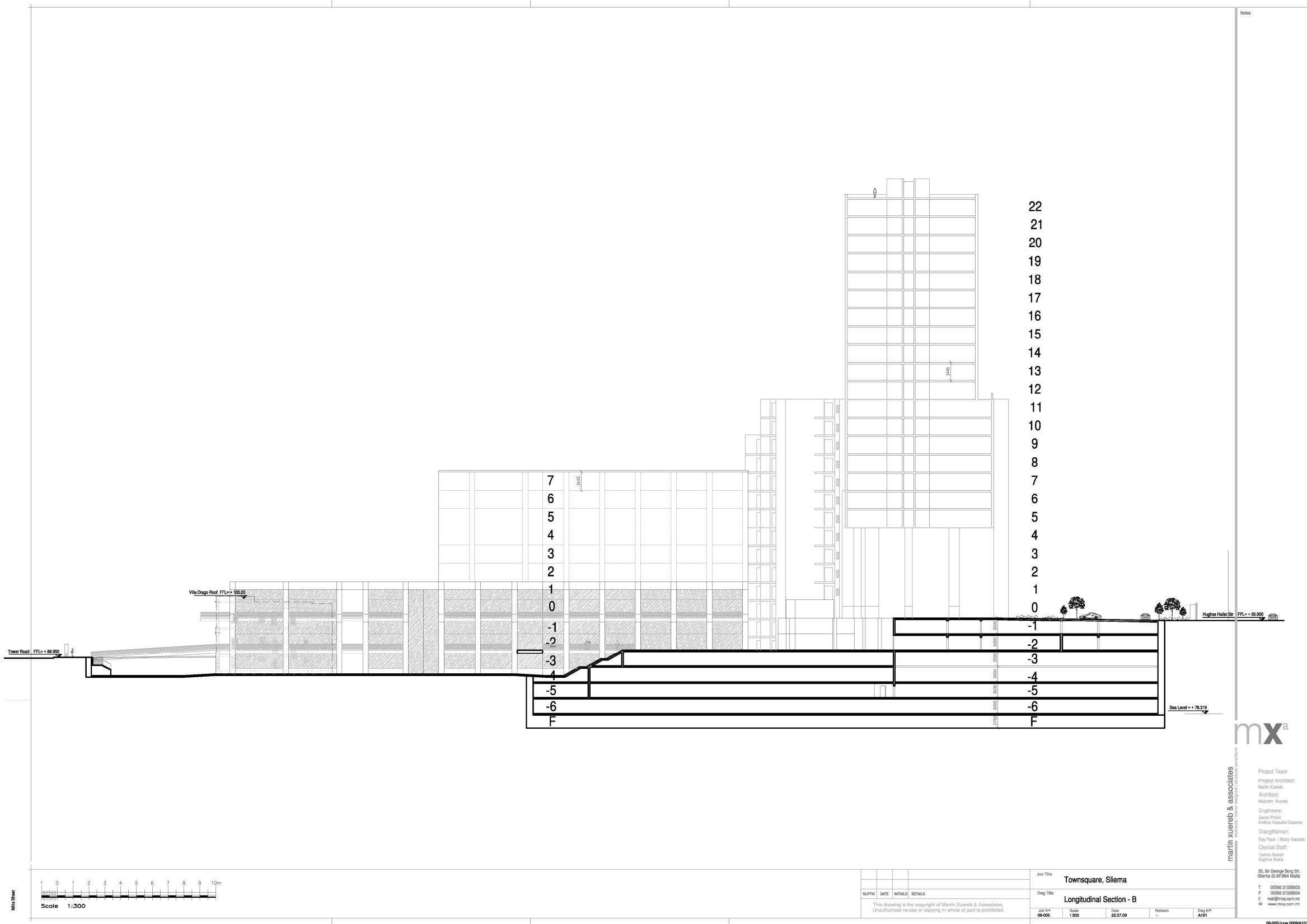


Figure 1.3: Longitudinal sections





## 2. BUILDING PERFORMANCE: WIND, SHADOW, AND VISUAL AMENITY

---

### INTRODUCTION

- 2.1. This chapter focuses on how the Scheme is expected to perform in its setting; it focuses on the effects of the buildings on the wind climate of the area, shadowing resulting from the Scheme, and the impacts of the Scheme on landscape and visual amenity.
- 2.2. The description of the setting of the Scheme sets the background against which the likely effects of it on the surroundings will be assessed.
- 2.3. The pedestrian safety / wind assessment is based on the baseline reports prepared by Rowan Williams Davies and Irwin, Consulting Engineers (RWDI Anemos Ltd). The landscape and visual amenity study was undertaken by Adi Associates Environmental Consultants Ltd.
- 2.4. The potential key issues associated with the Scheme are outlined below:

#### Key Issues

- Areas within and near the Scheme where wind velocities are considered to be uncomfortable or unsafe
- Shadowing of outdoor recreation areas and residences
- Effects of the Scheme on the Landscape and Visual Amenity of the area

### Terms of Reference

- 2.5. The ToR issued by MEPA required that the building performance aspects address the following:

#### 2.0 A description of the Proposed Site and its Surroundings

*Note 10: This description is identified by the area of influence for each relevant parameter. The area of influence for each parameter shall be determined by the consultants who shall also justify the extent of the chosen area of influence. This must be approved by MEPA prior to commencement of the EIA. The sampling locations within the area of influence must also be approved by the MEPA prior to commencement of the EIA.*

#### 2.5 Landscape, Topography and Visual Assessment

*This should include a landscape characterisation of the area and visual amenity of the area. 'Non-visual' aspects of the development should also be*



*considered and include those impacts which reduce the possibility for the public to enjoy the landscape including emissions, noise, etc.*

## *2.6 Existing Microclimate of the Area including Wind*

*The air quality (refer to Appendix 3 for more detailed terms of reference) and wind climate of the area shall be described.*

## *4.0 Assessment of Environmental Impacts and Risks of the Proposed Development*

*All significant impacts and risks posed by the proposed project, during site clearance, demolition, construction and operation stages, should be assessed, given the environmental characteristics of the site and its surroundings outlined in Section 2 and the policies outlined in Section 3. A descriptive and quantitative analysis (including magnitudes and timing) of the impacts of the proposals should be made, and presented in summary chart/table format. The various techniques, methods and assumptions used in the analysis and predictions should be outlined. The impacts should assess:*

*Description of the impact;*

*Duration (temporary or permanent);*

*Extent (in relation to site coverage and surroundings and associated features);*

*Direct or indirect impact;*

*Adverse or beneficial;*

*Reversible or irreversible effects of the impact and extent or irreversibility as well as description of any associated conditions/assumptions for irreversibility;*

*Sensitivity of resources to impacts;*

*Probability of impact occurring;*

*Confidence level/limits to impact prediction;*

*Scope of mitigation/enhancement; and*

*Residual impacts.*

*Worse case scenarios should be assessed where relevant.*

## *4.7 Visual Impact<sup>1</sup>*

---

<sup>1</sup> Given the absence of local guidelines on landscape assessment it is recommended to use 'Guidelines for Landscape and Visual Impact Assessment, 2<sup>nd</sup> Edition', published by Spon Press, 2002 and edited by The Landscape Institute and the Institute of Environmental Management & Assessment.



*Including views from and into the site and the impact of the proposed development and alternatives on the visual amenity of the site. This should refer to both the proposed development and any other ancillary developments associated with it, and also any alternatives.*

*Submissions required include colour photomontages, that shall be made at the appropriate scale and level of detail and include colour photomontages taken from points agreed with the MEPA and submitted on A4 (at least). Photomontages are to show the proposed interventions superimposed on the existing landscape, not only adjacent to the site. The landscaping scheme that is being proposed should be included in the photomontage and the maturity of the landscaping scheme as shown (which shall not be less than 5 years after planting) shall be indicated.*

*Apart from the photomontage itself, the following are required:*

*A copy of the base photograph used in the preparation of the photomontage (this should enable a comparison of the situation as existing and as proposed - hence the size of the photograph depicting the situation as at present is to be of the same size as the photomontage);*

*Date when the base photograph was taken;*

*A site map indicating the exact positions from where the photographs were taken and to which the photomontages should cross-refer;*

*Height from which the photo was taken.*

#### **4.10 Effects of Over-Shadowing**

*This assessment shall determine the extent of the shadow of the proposal which will be cast over surrounding third party property, clearly distinguishing between seasonal differences.*

### **5.0 Design of Mitigation Measures, Identification of Residual Impacts and Monitoring Programme**

#### **5.1 Mitigation Measures**

*This should include a description of the measures envisaged to prevent, minimise and where possible offset any significant adverse effects on the environment of the project during both construction and operational phases (including reference to consideration of alternatives in section 1. above). Such measures could include technological features; alternative technological features; operational management techniques; enhanced site-planning and management; aesthetic measures; conservation measures; reduction of magnitude of project; and health and safety measures.*

#### **5.2 Residual Impacts**

*Any residual impacts, that is those impacts that cannot be mitigated or those remaining impacts following implementation of mitigation measures, should also be described, quantified and presented in tabular format.*

### 5.3 Monitoring Programme

*Consultants must propose a monitoring program which should take into account monitoring of those features considered to have a negative or an uncertain impact. In particular, monitoring of air and water quality of the surrounding area is suggested.*

*The program must be proposed at different stages: before, during and after construction. Details regarding type of and frequency of monitoring must also be given. This program shall include an audit and evaluation of forecasts, predictions and mitigation measures made in the EPS.*

- 2.6. The same TOR have been used for this assessment.

### Objectives of Assessment

- 2.7. In meeting these ToR the Building Performance studies assessed:

- The changes to the wind climate within and near the Application Site;
- The changes to the shadowing within and near the Application Site; and
- The visual amenity of the Scheme.

They also:

- Describe the impacts that may arise from the proposed Scheme in respect of the foregoing; and
- Propose mitigation measures to minimise any adverse impacts.

## ASSESSMENT METHODOLOGY

### Standards and Guidance

- 2.8. The principle sources of guidance for the impact assessment are the *Structure Plan for the Maltese Islands*, the *North Harbours Local Plan*, and specifically:
- Preparation of Environmental Statements for Planning Projects that require Environmental Assessment, A Good Practice Guide produced by the Department of the Environment (now DETR) (1995);
  - *Guidelines for Landscape and Visual Impact Assessment* (2002) – Institute of Environmental Management & Assessment and the Landscape Institute; and
  - Draft Landscape Assessment Study – MEPA, September 2004.
- 2.9. There is no national guidance in respect of the effects of changes in wind or shadow patterns. This EPS Update draws on the guidance available in San Francisco City's Planning Code, Section 295, an approach which is common to a number of cities.

## **Area of Influence**

- 2.10. The Area of Influence for the wind and shadow studies is confined to the areas affected by the Scheme; principally the Application Site and the abutting land uses and streets. The Area of Influence for the Visual Amenity study was defined using a combination of desk and field-based techniques. The Zone of Visual Influence (ZVI) of the Scheme was identified through the use of computer simulations to map those areas from which the Scheme would be visible, coupled with validation in the field. The resulting ZVI was agreed with MEPA (see below). The same ZVI has been used for this EPS update because the height of the buildings has been reduced.

## WIND STUDY

### Competence of Surveyor

- 2.11. The wind studies were undertaken by RWDI (Anemos) Ltd, Consulting Engineers and Scientists.

### Methodology

- 2.12. RWDI carried out a qualitative analysis to estimate the pedestrian wind conditions on and around the proposed development. The analysis took account of:
- A review of local long-term meteorological data and computer models of the site and surroundings;
  - RWDI's extensive experience of wind tunnel modelling of building developments and their knowledge of wind flows around buildings and the application of engineering judgment;
  - The use of software developed by RWDI (*Wind Estimator*) for estimating the potential wind and potential wind comfort conditions around generalised building forms; and
  - The use of RWDI's proprietary Computational Fluid Dynamics (CFD) software *Virtual Wind* for simulation of wind interaction with the proposed buildings and the resulting wind flow patterns in respect of the prevailing wind patterns.
- 2.13. In the absence of wind tunnel testing, this desk-top approach provides a screening-level estimation of pedestrian wind conditions at a massing level through reference to the Lawson Comfort Criteria. RWDI's full report is reproduced in ***Technical Appendix 1: Wind Study***. It is noted that the quantitative study only provides an indication of the changes in wind speed relative to the speed of the wind in the surrounding area; quantified changes (i.e. estimates of wind speeds) can only be derived from more in-depth studies and wind tunnel testing.

### Wind data

- 2.14. Long-term wind statistics recorded between 1976 and 2004 at Malta International Airport were analysed and adjusted to the site conditions by modelling the effect of ground roughness on the wind speeds approaching the site. The prevailing wind directions are west and west-north-west. These directions each account for approximately 13.5% of the wind for this site. There are much smaller peaks for easterly and southerly directions.

### Wind Comfort

- 2.15. Pedestrian wind comfort criteria developed at RWDI are used in this assessment. They are categorised according to three typical pedestrian activities:
- **Sitting:** Low wind speeds during which one can read a newspaper without having it blown away. These wind speeds are appropriate for outdoor cafes and other amenity spaces that promote sitting.

- **Standing:** Slightly higher wind speeds that are strong enough to rustle leaves. These wind speeds are appropriate at major building entrances, bus stops or other areas, where people may want to linger but not necessarily sit for extended periods of time.
  - **Walking:** Winds that would lift leaves, move litter, hair, and loose clothing. Appropriate for sidewalks, intersections, plazas, parks, or playing fields where people are more likely to be active and receptive to some wind activity. This category was further subdivided into leisure and business walking. Old people and mothers with young children may be at risk in the latter case.
  - **Uncomfortable:** The effects of wind speeds at this level would range from small trees swaying and wind force being felt on the body to whole trees being in motion and inconvenience being felt when walking. Wind of this magnitude would be considered a nuisance for most activities.
- 2.16. Wind conditions are considered suitable for sitting, standing, or walking if the wind speeds are within the ranges for at least four out of five days (80% of the time). An **uncomfortable** designation means that the criterion for walking is not satisfied. **Safety** is also considered by the criteria, where excessive gust wind speeds can adversely affect a pedestrian's balance and footing. If winds sufficient to affect a person's balance occur more than two times per summer or winter season, the wind conditions are considered severe. Wind control measures are typically required at locations where winds are rated as being uncomfortable or severe.

### Determining Impact Significance

- 2.17. The following criteria have been used to assess the significance of the impacts on the changes in wind climate that may result from the construction of the Scheme. It is noted that the pedestrian comfort within private areas of the Application Site is not considered:
- **Not significant** – little or no change to the pedestrian comfort in the public areas in the vicinity of the Application Site or within the Scheme that would be uncomfortable as a result of the construction of it;
  - **Minor significance** – changes to the pedestrian comfort in the public areas in the vicinity of the Application Site that result in an uncomfortable designation or the creation of public areas within the Scheme that would be uncomfortable; and
  - **Major significance** – changes to the pedestrian comfort in the public areas in the vicinity of the Application Site as a result of the construction of the Scheme or the creation of public areas within the Scheme where pedestrian safety is compromised or wind conditions are predicted to be severe with little opportunity for changes to be offset by mitigation.

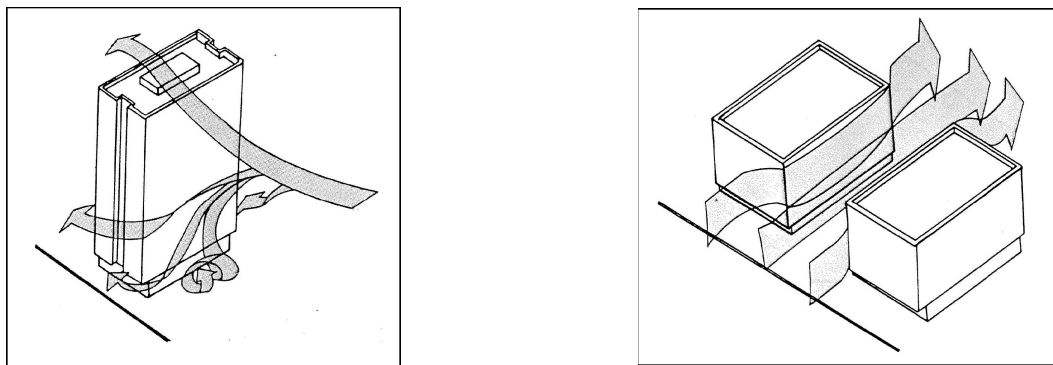
### Pedestrian Wind Assessment

- 2.18. Predicting wind speeds and occurrence frequencies is complicated, involving building geometry, dimensions, orientation, surrounding buildings, upstream terrain, and local wind climate. Large buildings tend to intercept the stronger winds at higher elevations and redirect them down to the ground level. Such a *Downwashing Flow* is

the main cause for pedestrian-level wind acceleration. There is also generally increased wind acceleration at the corners of tall buildings as the down-washed wind flows around the edge of the building. Also, when two buildings are situated side by side, wind flow tends to accelerate through the gap between the buildings due to the *Channelling Effect* (see **Figure 2.1**). If these buildings/wind combinations occur for prevailing winds, there is an increased potential for even higher wind speeds.

- 2.19. Generally, wind conditions suitable for walking are appropriate for sidewalks; wind speeds comfortable for standing are preferred for building entrances and plazas where pedestrians are more apt to linger; and lower wind speeds comfortable for sitting are desired for outdoor seating areas such as podium terraces, outdoor restaurants and swimming pools.

**Figure 2.1: Downwash Flow and Channelling Effects**



Downwash flow Channelling effects

- 2.20. The following describes the anticipated pedestrian wind conditions at notable pedestrian areas on and around the Scheme, the locations of which are described in *Technical Appendix 1*.
- 2.21. To visualise the predicted wind conditions, a Computational Fluid Dynamics (CFD) analysis was conducted for wind directions from the west, east, and south. These were expected to be the most important directions and the ones that would contribute most to the assessment of comfort levels.
- 2.22. RWDI notes that the modelling covered:
- Villa Drago centrally located on the lower piazza on the west end of the development site;
  - An upper piazza level, which stretches the length of the development towards the Landmark tower, (approximately 78m above the Hughes Hallet Street level at its tallest point);
  - Blocks of varying height that stretch out from both sides of the tower and sit on the southeast corner of the development; and
  - Existing surroundings within a 250m radius of the Scheme for the western, eastern, and southern wind directions.

- 2.23. The results are presented as a horizontal or vertical slice through the site and indicate what is happening on that slice. They are scaled from red (highest wind speeds) to blue (lowest wind speeds). RWDI also noted:

*The important role of these contour plots is to indicate flow patterns and relative speeds. The things to look for in the figures are instances where areas of stronger winds occur when compared with the general surrounding colours; in particular, yellow, orange and red areas at low level indicate strong street level winds.*

- 2.24. The individual “slices” are found in the **Technical Appendix 1**. The overall assessment is summarised in **Figure 2.2** where the coloured dots represent estimates of the likely pedestrian activity for which the wind microclimate will be suitable during the windiest season. For the piazza and landmark building the following results have been obtained:

#### The Piazza

*Pedestrians are expected to walk within the piazza from the west entrance to enter the retail shops which border this area and even sit within the provided outdoor garden space; therefore, conditions suitable for standing/entrance or better are desirable. The lower piazza, where the Villa Drago is located, experiences conditions on its west side at Location 1 that are suitable for standing in the worst case, whereas Location 2 in the area north of Villa Drago is likely to experience a relatively calmer microclimate suitable for sitting throughout the year. Location 8 is above the lower piazza on a walkway which is at the Tower Road level and is exposed to slightly higher wind speeds, particularly when the easterly and southerly winds blow. As a result the conditions are expected to be suitable for standing in the worst case. Effective use of planting within the garden areas intended for the lower piazza level on the west side will provide conditions suitable for sitting throughout the year.*

*At the lower piazza level, due to the removal of the access route connecting the square around Villa Drago to the sea and the inclusion of the relatively tall block on the south side of the development, the wind microclimate is likely to be less windy when compared to the 2007 design scheme. Locations 3, 4 and 5 are expected to benefit from the additional shelter; the wind conditions at these locations are likely to be suitable for sitting throughout the year. Location 7 is situated on the walkway at the same level as Tower Road and because of its proximity to the corner stronger wind speeds are experienced and standing/entrance conditions exist.*

*The upper piazza level is affected by wind penetration from the pedestrian street which runs through the development connecting the sea to Tigne Street, and by wind flows through the arch at the base of the tower. The wind conditions within the piazza improve on moving westward away from the base of the Landmark tower as shown by the standing/entrance conditions expected at Location 6 compared with leisure walking conditions at Locations 9, 10, 11, 12 and 17. The wind environment along this access route is considered to be acceptable should this area be designated as a*

*pedestrian thoroughfare; however if outdoor seating areas or entrances to the adjacent buildings are proposed within this space, mitigation is recommended.*

*We highly recommend keeping the area at the base of the tower, near Location 9, clear of any outdoor amenity spaces. This location is likely to be the windiest on the west side of the tower. Location 9 has a leisure walking classification in worst case; however it is near to the upper limit and is close to achieving a business walking classification. The use of planting and local canopies on the entrances of the retail units below the tower and within the outdoor amenity spaces in the piazza are expected to be beneficial and provide shelter to pedestrians enjoying the open space. However, because the winds through the tower are pressure driven and there is an added complexity of the horizontal winds that blow through the upper piazza through the pedestrian access route, careful design of external features will be required to optimize their performance.*

### *The Landmark Tower*

*The Landmark tower is tall relative to the existing surroundings and is therefore expected to create a downdraught that brings air down to street level. The winds that blow through the open arch at the base of the tower are driven by the difference in pressure between the opposite ends of the channel. At the Hugh Hallet Street Level, conditions are similar to those reported for the 2007 scheme design; however due to the presence of the tall building west of the Landmark tower, less wind is likely to pass through the arch which remains at the bottom of the tower. Although the wind conditions through the arch at the base of the tower remain strong, similar to the presented 2007 results, and suitable for business walking at Location 13, the wind conditions at the east entrance of the arch, at Location 14, are suitable for leisure walking at the windiest times of the year. The conditions east of the Landmark tower are therefore acceptable for the desired pedestrian use as a pedestrian thoroughfare.*

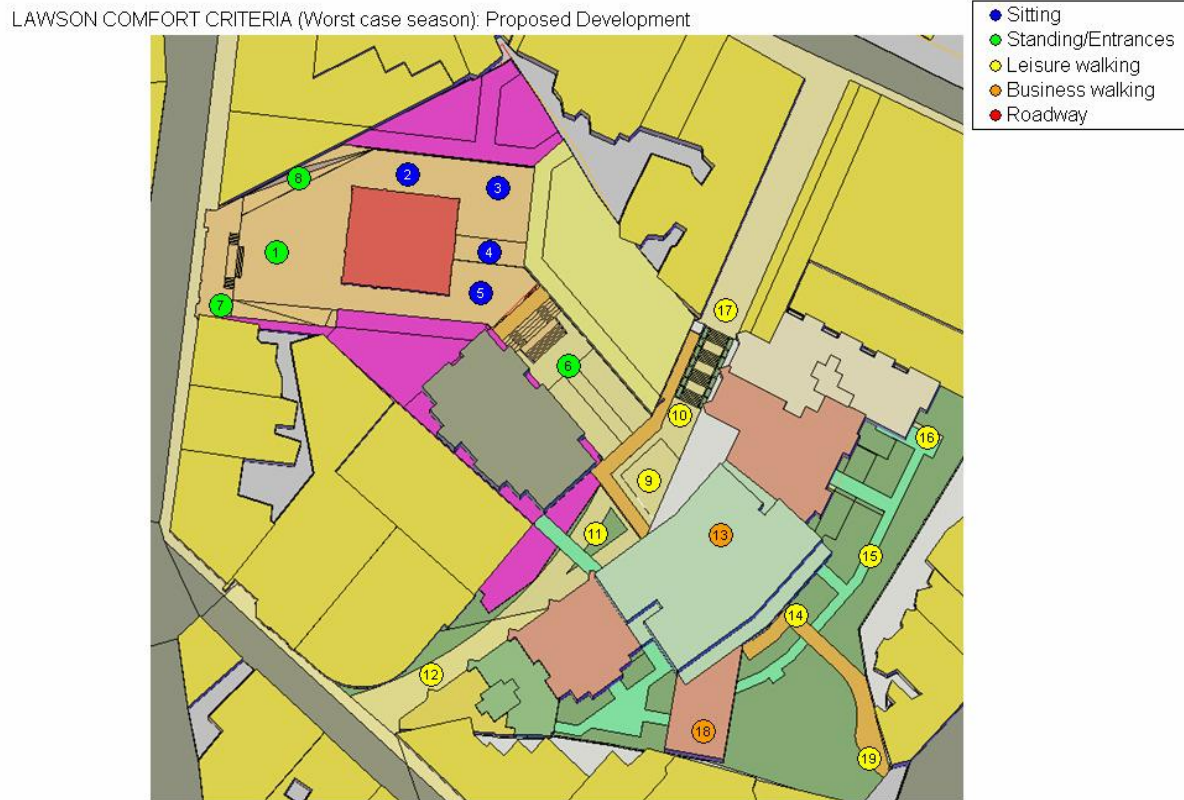
*Location 18, situated underneath the tall building attached to the Landmark tower, is likely to experience the windiest conditions along Hugh Hallet Street. The wind microclimate in the worst case is expected to be classified suitable for business walking. This area is expected to be a major thoroughfare so the target wind conditions are leisure walking if the area is kept clear of any entrances to the adjacent buildings. The expected conditions are therefore one category windier than desired for a pedestrian thoroughfare and two categories windier than desired in the vicinity of main entrances. We recommend mitigation to reduce the wind speeds through this channel. Typically this could take the form of suitable vertical screening to increase resistance to flow through the underpass at pedestrian level.*

*Pedestrian wind conditions on Hughes Hallet Street along the east elevation of the site, at Locations 15, 16 and 19 are suitable for leisure walking which is the same classification as for the baseline scenario and similar to those presented for the previously tested scheme. If this street is a thoroughfare then leisure walking conditions are compatible with this use. If*



there are entrances along this elevation then these could be recessed to create a sheltered buffer zone which allows pedestrians to adjust to the change in local microclimate when exiting the building.

**Figure 2.2: Lawson Comfort Criteria for proposed Sliema Townsquare development – worst case**



## Conclusions

2.25. The following conclusions have been provided by RWDI<sup>2</sup>:

*At the lower piazza levels, as a result of the removal of the access route connecting the square around Villa Drago to the sea and the inclusion of the relatively tall block on the south side of the development, the wind microclimate is likely to be less windy at these lower levels. The results at Locations 1, 2, 6 and 7 have not changed, and Locations 3, 4 and 5 are expected to benefit from the additional shelter. The conditions at these locations are relatively calmer within the new scheme and are suitable for sitting in the worst case. Standing conditions are likely at Locations 1, 6, 7 and 8 in the worst case; however these are believed to be in keeping with the desired pedestrian usage as conditions are likely to be improved in the*

<sup>2</sup> RWDI e-mail to Perit Xuereb dated 31<sup>st</sup> July 2009

*summertime by one category and therefore be suitable for outdoor seating areas.*

*The large pedestrian route that connects the development to the sea and runs in the north-south direction is likely to experience conditions suitable for leisure walking along the full stretch of pavement, in the worst case. The wind conditions at Locations 9, 10, 11, 12 and 17 are considered to be acceptable should this area be designated as a pedestrian thoroughfare; however if outdoor seating areas are proposed within this space, mitigation is recommended. Similar to what was suggested in the previous scheme, landscaping and free-standing screening is advised. Also, should entrances to the adjacent buildings be situated along this route, mitigation may also be necessary: generally in the form of local screening or entrance recessing.*

*At the Hughes Hallet Street Level, conditions are similar to those reported on the previously tested scheme; however due to the presence of the tall building west of the landmark tower, less wind is likely to pass through the large gap which remains at the bottom half of the tower. As a result the local wind speeds at location 14 on the east side of the gap on Hughes Hallet Street are likely to be reduced when the prevailing and secondary winds blow, and the local microclimate is now expected to be suitable for leisure walking at the windiest times of the year. These conditions are considered to be acceptable for a pedestrian thoroughfare. There is no change expected to the local wind environment at Location 13, situated within the gap of the landmark tower.*

*Leisure walking conditions expected along Hughes Hallet Street at Locations 15, 16 and 19 are similar to those presented for the previously tested scheme.*

*Location 18, situated underneath the tall building that is attached to the landmark tower, aligned towards the south, and designed with a pedestrian thoroughfare underneath, is likely to experience conditions suitable for business walking in the worst case. These conditions are considered to be one category windier than desired. Mitigation is recommended.*

- 2.26. RWDI further recommends that the area at the base of the tower, near Location 9, be kept clear of any outdoor amenity spaces. This location is likely to be windiest on the west side of the tower; it is actually at the upper limit of leisure walking, and is close to achieving a business walking classification. Thus, it will be very difficult to mitigate for conditions to suit an outdoor seating area or any type of area where pedestrians are expected to enjoy the space for longer durations.

### **Assessment of Impacts**

- 2.27. The assessment of impacts is based on the previously described definitions of not significant, minor significance, and major significance; they are repeated hereunder to facilitate understanding of subsequent sections.

- **Not significant** – little or no change to the pedestrian comfort in the public areas in the vicinity of the Application Site or non-public areas within the Scheme that would be uncomfortable as a result of the construction of it;
- **Minor significance** – changes to the pedestrian comfort in the public areas in the vicinity of the Application Site that result in an uncomfortable designation or the creation of public areas within the Scheme that would be uncomfortable; and
- **Major significance** – changes to the pedestrian comfort in the public areas in the vicinity of the Application Site as a result of the construction of the Scheme or the creation of public areas within the Scheme where pedestrian safety is compromised or wind conditions are predicted to be severe with little opportunity for changes to be offset by mitigation.

## Potential Impacts

- 2.28. The potential impacts of the Scheme on the wind climate of the Application Site and environs, determined in terms of pedestrian comfort and safety, may range from impacts that allow passive activities such as sitting out, reading a newspaper outdoors to impacts that not only make it difficult to walk under strong wind conditions but also affect pedestrian safety for vulnerable members of society. Such effects may be experienced within the Application Site. They are also evident in third party property areas, but not as a result of the Scheme. The impacts of the Scheme on the wind climate in private areas, such as areas frequented by residents but not available to the public, such as on private balconies are not assessed; the residents would no doubt make themselves aware of such issues prior to purchase, and with such knowledge are free to frequent exposed areas. The impact assessment focuses on the areas open to the public and third party property already in the area.

## Prediction and Significance of Impacts

- 2.29. Wind conditions suitable for business walking only have been predicted for two locations within the Scheme:
- Location 9: This location is likely to be windiest on the west side of the tower, it is actually at the upper limit of leisure walking, and is close to achieving a business walking classification.
  - Location 18: This location is situated underneath the tall building that is attached to the landmark tower, aligned towards the south, and designed with a pedestrian thoroughfare underneath. This location is likely to experience conditions suitable for business walking in the worst case.
- 2.30. No significant changes are expected on third party property.
- 2.31. The application of the significance criteria described above results in impacts of minor significance with scope to mitigate.

## Mitigation

- 2.32. The RWDI lists a number of mitigation measures related to different locations. These are summarised below.

- 2.33. Effective use of planting within the garden areas intended for the lower piazza level on the west side will provide conditions suitable for sitting throughout the year.
- 2.34. RWDI further recommends that the area at the base of the tower, near location 9, be kept clear of any outdoor amenity spaces. This location is likely to be windiest on the west side of the tower, it is actually at the upper limit of leisure walking, and is close to achieving a business walking classification. Thus, it will be very difficult to mitigate for conditions to suit an outdoor seating area or any type of area where pedestrians are expected to enjoy the space for longer durations. The use of planting and local canopies on the entrances of the retail units below the tower and within the outdoor amenity spaces in the piazza are expected to be beneficial and provide shelter to pedestrians enjoying the open space. However, because the winds through the tower are pressure driven and there is an added complexity of the horizontal winds that blow through the upper piazza through the pedestrian access route, careful design of external features will be required to optimise their performance.
- 2.35. At location 18, mitigation is recommended to reduce the wind speeds through this channel. Typically this could take the form of suitable vertical screening to increase resistance to flow through the underpass at pedestrian level.
- 2.36. Further discussion and consideration of these measures is recommended between RWDI and the design team to optimise their effectiveness of enhancing the local wind environment and providing suitable shelter to relatively windier areas throughout the development.

## SHADOW STUDY

### Competence of Surveyor

- 2.37. The shadow study was undertaken by Adi Associates Environmental Consultants Ltd.

### Methodology

- 2.38. The shadow baseline study was drawn up for the summer and winter solstice for one hour after sunrise, for midday, and for one hour before sunset. In accordance with best practice the shadows were also determined for one month either side of the solstices: 21<sup>st</sup> May and 21<sup>st</sup> July, and 21<sup>st</sup> November and 21<sup>st</sup> January.
- 2.39. Two scenarios were modelled: the Scheme (updated), and the development of the site along traditional lines with 100% site coverage and building heights to 7 storeys plus penthouses. The assessment describes and compares the shadow effects of the two.

### Shadowing Criteria

- 2.40. Shadowing criteria commonly used abroad are related solely to the effects of shadowing on public open spaces. San Francisco City<sup>3</sup>, for example, requires that any new project must not cast new shadow on any public park under the jurisdiction of the San Francisco Recreation and Park Commission within or outside of the study area between one hour after sunrise and one hour before sunset.
- 2.41. The shadows may be categorised according to the uses affected:
- Shadowing of public open spaces close to the Application Site;

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<sup>3</sup> San Francisco Planning Code:  
Section 263.11:

Reduction of Shadows on Certain Public, Publicly Accessible, or Publicly Financed or Subsidized Private Open Space.

- (1) New buildings or additions subject to this Section shall be shaped to reduce substantial shadow impacts on public plazas, parks or other nearby publicly accessible or publicly financed private open spaces. The criteria set forth in Section 147 of this Code shall be used to assess the shadow impacts of new building development over 40 feet in height.

Sec. 295.

Height restrictions on structures shadowing property under the jurisdiction of the recreation and park commission.

(a) No building permit authorizing the construction of any structure that will cast any shade or shadow upon any property under the jurisdiction of, or designated for acquisition by, the Recreation and Park Commission may be issued except upon prior action of the City Planning Commission pursuant to the provisions of this Section; provided, however, that the provisions of this Section shall not apply to building permits authorizing:

(1) Structures which do not exceed 40 feet in height;

(2) Structures which cast a shade or shadow upon property under the jurisdiction of, or designated for acquisition by, the Recreation and Park Commission only during the first hour after sunrise and/or the last hour before sunset;

(3) Structures to be constructed on property under the jurisdiction of the Recreation and Park Commission for recreational and park-related purposes;

(4) Structures of the same height and in the same location as structures in place on June 6, 1984;

- Shadowing of 3<sup>rd</sup> party property dwellings and / or private open spaces; and
- Shadowing of open spaces within the Scheme.

### Policy Context

17. The principal sources of policy and legislative guidance for the shadowing studies are the *Structure Plan for the Maltese Islands*<sup>4</sup>, the *North West Local Plan*<sup>5</sup>, and the policies relating to development sites.

### General Overview

- 2.42. Maltese planning policy does not specifically address the effects of buildings on shadowing. Structure Plan Policy BEN 1 deals with bad neighbourliness, and therefore can be interpreted to include shadowing. There is no mention of shadowing in the *North Harbours Local Plan*.

### Design and Policy Guidance 2007

- 2.43. Policies 1.4 and 2.10 of Design and Policy Guidance 2007 address shadowing generally.

- Policy 1.4: Development and spaces

*Developments should be designed so that buildings contribute collectively and positively through their siting and massing to the spaces they define. In particular, frontages should properly define public and private space. The Malta Environment and Planning Authority will encourage large developments to contain public spaces, including public amenity space, which should be designed to allow sunlight to penetrate, to provide shade and to avoid generating excessive wind speeds.*

- Policy 2.10 Application of Floor Area Ratio

*When applying the Floor Area Ratio, the Authority will:*

*(g) have regard to the building form and mass of adjacent development, and ensure that the new development is compatible with the existing development and does not have an adverse impact upon it.*

### Determining Impact Significance

- 2.44. The following criteria have been used to assess the significance of the impacts on the changes in shadowing that may result from the construction of the Scheme. It is noted that shadowing within private areas of the Application Site is not considered:

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<sup>4</sup> Planning Services Division, 1990a. *Structure Plan for the Maltese Islands: Written statement and key diagram*. Ministry for Development of Infrastructure, Government of Malta; xiii + 125pp + map.

<sup>5</sup> MEPA (2006) North West Local Plan. Approved in August 2006.

- **Not significant** – little or no change to shadowing in the public areas or private recreation areas to which the public are admitted in the vicinity of the Application Site as a result of the construction of the Scheme;
- **Minor significance** – changes to shadowing in the public areas or private recreation areas to which the public are admitted in the vicinity of the Application Site that result in a loss of recreation potential; and
- **Major significance** – changes to shadowing in the public areas or private recreation areas to which the public are admitted in the vicinity of the Application Site as a result of the construction of the Scheme that would prevent the use of the area for recreation with little opportunity for changes to be offset by mitigation.

### **Shadow Assessment - Prediction and Significance of Impacts**

- 2.45. The Figures below illustrate the extent of shadowing on a cloudless day on the corresponding dates.



Figure 2.3: Shadowing: 21 November: Traditional Housing



1 hour after sunrise



Noon



1 hour before sunset

Figure 2.4: Shadowing: 21 November: Scheme



1 hour after sunrise



Noon



1 hour before sunset



Figure 2.5: Shadowing: 21 December: Traditional Housing



1 hour after sunrise



Noon



1 hour before sunset

Figure 2.6: Shadowing: 21 December: Scheme



1 hour after sunrise



Noon



1 hour before sunset

Figure 2.7: Shadowing: 21 January: Traditional Housing



1 hour after sunrise



Noon



1 hour before sunset

Figure 2.9: Shadowing: 21 January: Scheme



1 hour after sunrise



Noon



1 hour before sunset



Figure 2.10: Shadowing: 21 May: Traditional Housing



1 hour after sunrise



Noon



1 hour before sunset

Figure 2.11: Shadowing: 21 May: Scheme



1 hour after sunrise



Noon



1 hour before sunset

Figure 2.12: Shadowing: 21 June: Traditional Housing



1 hour after sunrise



Noon



1 hour before sunset

Figure 2.13: Shadowing: 21 June: Scheme



1 hour after sunrise



Noon



1 hour before sunset



Figure 2.14: Shadowing: 21 July: Traditional Housing



1 hour after sunrise



Noon



1 hour before sunset

Figure 2.15: Shadowing: 21 July: Scheme



1 hour after sunrise



Noon



1 hour before sunset

- 2.46. In view of the transient nature of shadowing, no single location is subjected to shadow throughout the day, and the loss of direct sunshine can be seen as both a benefit and a disbenefit, depending on the season.
- 2.47. The shadow diagrams show that the public open space along Ix-Xatt ta' Qui-Si-Sana, including the rocky foreshore, are impacted by shadows cast from the buildings along the seafront. The Scheme will extend that impact further over the sea. It will also impact additional areas of the rocky foreshore at noon insofar as there will no longer be patches of sunshine. The diagrams also show that the shadows on the open space at the junction of Triq it-Torri and Triq il-Kbira will not be exacerbated as a result of the Scheme.
- 2.48. The worst case shadowing occurs in both the winter and summer seasons 1 hour after sunrise, when shadow from the tower is expected to extend slightly the shaded area over dwellings to the southwest of the Application Site. Shadows cast at noon by the traditional development or the Scheme marginally affect Sliema Town Square Phase 1 apartments. The shadows cast by the towers one hour before sunset are similar in impact on the surrounding buildings as that caused by traditional housing. Since the Scheme will not exacerbate the shadowing on public open spaces, and since the impact on nearby dwellings is marginal, the impact of shadowing is judged to be not significant.

## VISUAL AMENITY

### Introduction

- 2.49. The assessment of visual amenity relates to the effect that the Scheme would have on the amenity of sensitive receptors (those experiencing views of the Scheme), relating the actual or perceived visible changes to the character and quality of the views.

### *Terms of Reference*

- 2.50. The ToR are set out at the beginning of this Chapter. The ToR require the EPS to undertake a “landscape characterisation of the area” but not assess the impact of the Scheme on the landscape *per se*. This update only contains the visual assessment as landscape was scoped out of the EPS.

### Objectives of the Assessment

- 2.51. The objectives of the visual amenity study were to:
- Undertake a baseline survey and characterisation of the visual amenity at and around the Scheme site using desk top and field survey techniques;
  - Establish the Zone of Visual Influence (ZVI) for the Scheme and identify the key viewpoints and receptors;
  - Input the potentially beneficial design measures to the Scheme;
  - Predict the impacts of the Scheme on the visual amenity of the Area of Influence;
  - Assess the significance of the impacts on the visual amenity of the Area of Influence; and
  - Describe the mitigation measures designed into the Scheme to minimise adverse impacts and enhance any beneficial impacts on the visual amenity of the Scheme.

### Legislation and Policies

- 2.52. The *Structure Plan for the Maltese Islands* only identifies two policies<sup>6</sup> that are relevant to assessing visual amenity and the impact of projects thereon. BEN 1 deals with bad neighbourliness and specifically with the visual intrusion of projects. BEN 2 indicates that applications for development permission will not be permitted if the project is unlikely to ‘maintain the good visual integrity of the area in which it is located’.

### North Harbours Local Plan

- 2.53. The NHLP identifies two principles in respect of view protection:
- Strategic ‘view corridors’ that seek to protect long views into and out of the plan area; and
  - Strategic views towards landmark buildings.

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<sup>6</sup> The majority of policies that relate to visual amenity only apply to Urban Conservation Areas (UCAs); there are no UCAs in the vicinity of the Application Site.

- 2.54. These are both addressed in policy NHSE07 Strategic Views and policy NHSE08 Strategic and Local Views described on Figure 2.16.

#### *NHSE07 Strategic Views*

*In accordance with Structure Plan Policies UCO10 and RCO4, a number of Strategic View Corridors are established to protect long views into and out of the plan area. Strategic Landmark Buildings are identified to provide a focus for these views. These View Corridors, as illustrated on Map SE2, include the building planes and skylines that should not be significantly disrupted by new development, especially high buildings. Views of important valleys will also be protected. Key identified view corridors are:*

- i. Valletta/Marsamxett Harbour to Msida Church and towards Mdina.*
- ii. University Site to Tigné Point, Marsamxett Harbour and Valletta....*

*Where deemed necessary by MEPA, applicants shall be required to provide photo-montages in order to prove that the new development will not significantly disrupt the identified building planes and skylines.*

*2.4.16 Within the identified Strategic View Corridors MEPA shall safeguard the settings of key landscapes, landmark buildings, Urban Conservation Areas and the Valletta World Heritage Site. The purpose of identifying these corridors is to recognise that certain key buildings can be seen from many locations. Their setting should be protected to maintain visual orientation and prevent homogeneous townscapes and skylines. Further policy guidance on safeguarding views as they affect Urban Conservation Areas is given in MEPA's Policy and Design Guidance: Development Control in Urban Conservation Areas (1995), para. 29.*

#### *NHSE08 Strategic and Local Views*

*MEPA will refuse development permission for any proposed development that is likely to have a detrimental effect on strategic views (as indicated in Map SE2) and local views of valley sides (as indicated in Map CV5), scheduled buildings or landmark buildings as viewed in their setting and/or against the skyline.*

*Landmark buildings for Gzira/Ta` Xbiex, Msida/Pieta, Pembroke, Paceville and Sliema/St. Julians's ...are indicated on the relevant Building Heights and Urban Design Maps.*

*2.4.17 MEPA will seek to ensure that any building proposal is compatible with the character of strategic and local views in terms of setting, scale and massing. Whether inside or outside UCAs, proposed development will not generally be acceptable if it impinges on locally important views or skylines, or if it would appear too close or too high in relation to a scheduled building or other landmark building/feature, or behind it so that its silhouette is marred.*



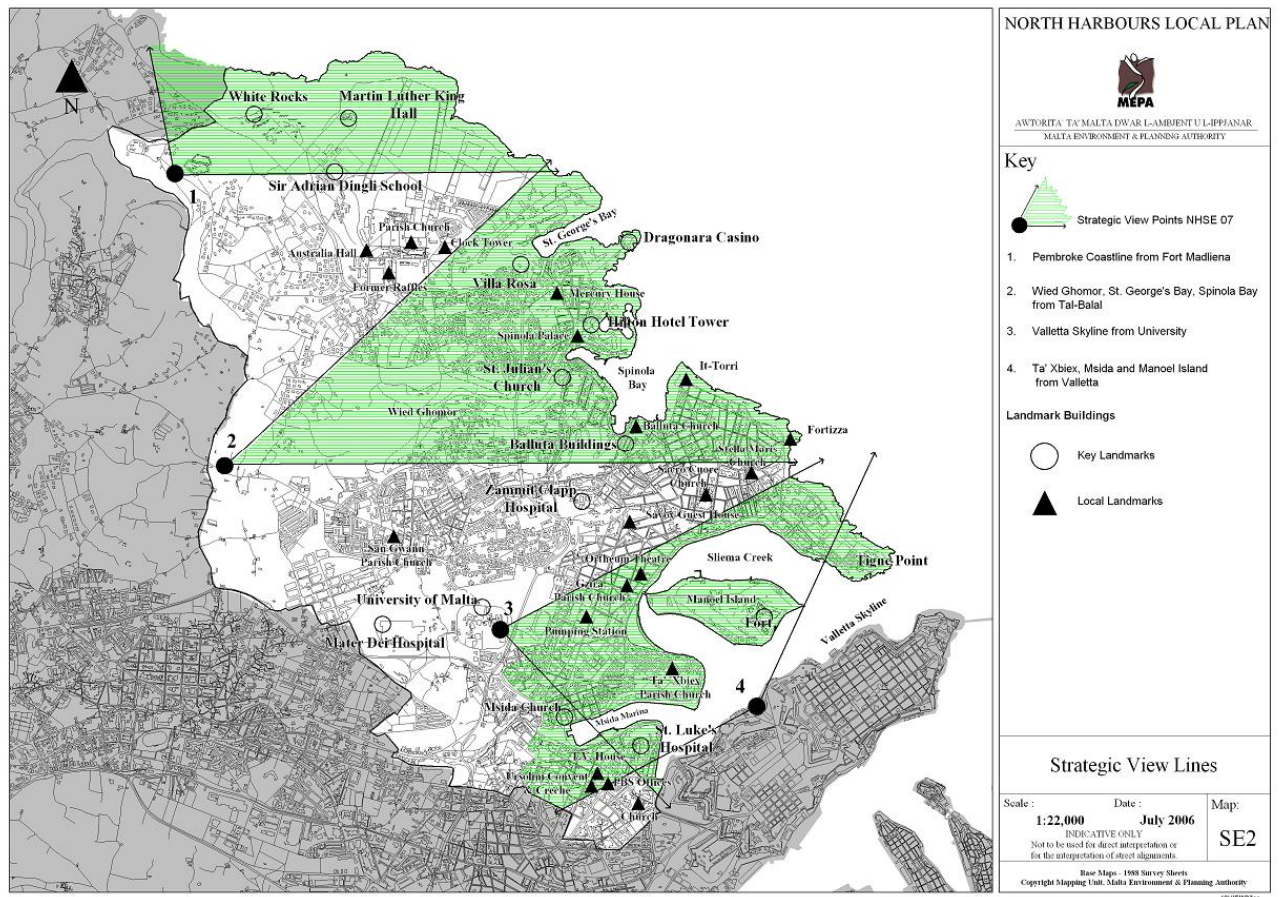
*2.4.18 A key urban design objective of the Local Plan is to improve visual orientation throughout the plan area. In this respect, landmark buildings are identified within the above-mentioned localities where it is required that the height and design of buildings in the vicinity respects the visual importance of these landmarks.*

2.55. Further guidance is given in explanatory notes as follows:

*Obstruction of strategic views, the settings of UCAs and the wider setting of the plan area by insensitive building design*

*2.2.14 The plan area accommodates 5 Urban Conservation Areas and affords prominent views into, and from, Marsamxett Harbour and Valletta (a World Heritage Site). Due to the undulating topography of the plan area, insensitively located tall buildings can adversely affect the setting and visual enjoyment of the surrounding townscape. Tall buildings that disrupt the skyline can affect landmarks and key buildings which often provide points for orientation and reference. The problem is particularly acute in the Swieqi and St. Julian's areas where the settings of the valleys and the coastline have already been degraded. Proposals on the scale of proposed towers will also affect views of valleys and coast.*

Figure 2.16: Strategic View Lines

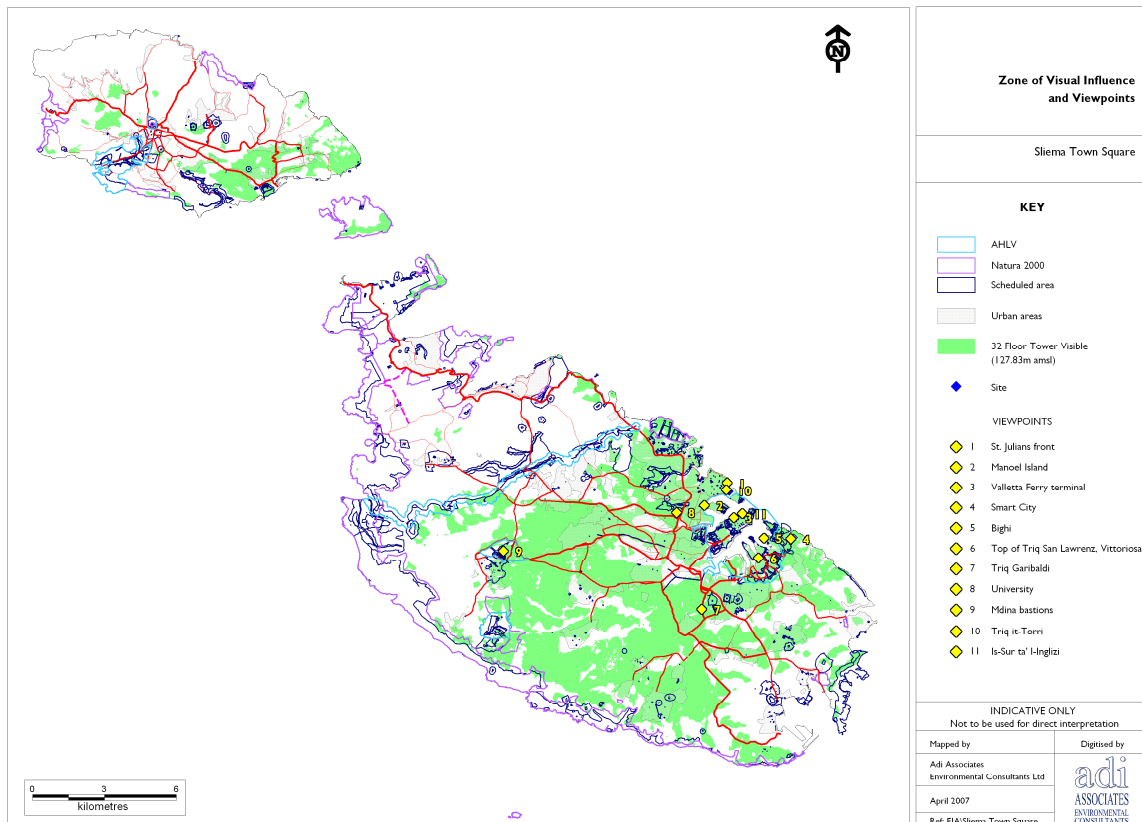


Source: North Harbours Local Plan

### Standards and Guidelines

- 2.56. In view of the fact that there are no Malta-specific visual amenity assessment guidelines, the visual assessment was carried out in line with the UK best practice methodologies, notably:
- *Guidelines for Landscape and Visual Impact Assessment (2002)* – Institute of Environmental Management & Assessment and the Landscape Institute.
- 2.57. A Method Statement for Visual Amenity Assessment was submitted to MEPA and accepted as an appropriate way to undertake the study. The same methodology has been used for this assessment.
- 2.58. For completeness' sake, the viewsheds generated by Vertical Mapper and the validated ZVI (ie the viewpoints) are shown together on Figure 2.17.

Figure 2.17: Location of View Points and theoretical ZVI



## Determining Impact Significance

- 2.59. The significance of impacts on visual amenity is dependent upon judgements about the value of the existing visual amenity compared to the new visual amenity that would be created, the number of people affected, the magnitude, duration, and permanency of the changes, and subjective judgements about the extent to which these changes would matter to those concerned.
- 2.60. The significance of visual impacts has been assessed in relation to:
- The number and sensitivity of receptors affected;
  - The duration of the changes;
  - The extent of visibility and distance from the Scheme;
  - The type of view – proportion of development visible, focus on Scheme due to proximity and whether it is fixed, transient, or sequential;
  - The changes to the view from the identified view points as shown by the photomontages; and
  - The scope for mitigation/enhancement measures to screen the development.
- 2.61. Based on the above criteria an assessment of the significance of the visual impact on each of the agreed viewpoints was made in terms of whether it is considered to be:

- **Not significant** - *little or no obvious changes to the view*. Where the extent of the negative impact on the visual amenity would be of limited importance in scale or magnitude, or affect persons of low sensitivity to change, and / or be a view of low intrinsic value. Alternatively, the impact would affect very few people, be transient and only affect a small part of the Scheme or panorama;
- **Minor significance** - *some noticeable changes to the view*. Where the extent of the negative impact on the view would be moderate or small in magnitude or extent, affect persons of moderate / low sensitivity to change. The view would have a low or moderate visual amenity / intrinsic value. Alternatively, the impact would be likely to affect a limited number of people and / or potentially be of major significance but with significant mitigation (e.g. screening) proposed or possible; or be
- **Major significance** - *large changes in the view*. Where the extent of the negative impact on the view would be large in magnitude and affect a large number of persons of moderate sensitivity or a moderate change and affect a smaller number of viewers of high sensitivity. The view would have a high visual amenity / intrinsic value.

#### ***Application Site visibility***

2.62. In assessing views there is often likely to be a continuum in the degree of visibility of the development from full view to no view. **Table 2.1** summarises the situation in respect of the Scheme as described below:

- Extent of site visibility – full view, partial view, glimpse or no view into the site at all demonstrates the exposure of the site and the processes thereon to public view.
  - The Scheme is not fully visible from any viewpoint. From all viewpoints it can only be seen as a glimpse or partially, because of the screening effects of terrain and structures;
- Proportion of development visible – expresses the proportion of the development that is visible from the viewpoints: full, most, some, small amount, or none.
  - The proportion of the Scheme that is visible from the viewpoints varies from a large part at the near viewpoints to just the top of the tower at the distant viewpoints.
- Focus on Scheme due to proximity – is an indicator of the distance from the Scheme and whether the viewpoint would focus on the development due to its proximity (i.e., it is the only thing to look at), or whether the Scheme is part of a panorama.
  - The views from Triq it-Torri fall into this category;
- Transient or sequential view – it is apparent that the principal receptors will have transient views. Transient views are those that pass quickly (like looking through a doorway as one walks past), and sequential views expose the receptor to

different yet sequential views of the site. The latter allows the site to be viewed for a longer period and from different and changing perspectives.

**Table 2.1: Summary of Application Site visibility from viewpoints**

	Viewpoints				
	VP 1	VP2	VP3	VP4	VP9
Distance of viewpoint from Scheme (m)	400	1,200	1,100	3,200	9,800
Extent of Scheme visibility	Partial	Partial	Partial	Partial	Partial
Proportion of Scheme visible	60%	30%	30%	20%	30%
Focus on Scheme due to proximity	Panorama	Panorama	Panorama	Panorama	Panorama
Transient or sequential view	Transient	Transient	Transient	Transient	Transient

	Viewpoints				
	VP10	VP11			
Distance of viewpoint from Scheme (m)	10	11,00			
Extent of Scheme visibility	Partial	None			
Proportion of Scheme visible	40%	15%			
Focus on Scheme due to proximity	Panorama	Panorama			
Transient or sequential view	Transient	Transient			

Note: Scheme is not visible from view points 5, 6, 7, and 8.

## Sensitivity of Visual Receptors

2.63. The sensitivity of visual receptors is dependant on the location from where they experience the view, their expectations, occupation, or activity at the viewpoint, and the importance of the view. UK Guidelines<sup>7</sup> note that the most sensitive receptors may include:

- Users of outdoor recreation facilities whose attention or interest may be focused on the landscape;
- Communities where the development results in changes to the landscape setting or valued views enjoyed by the community; and
- Occupiers of residential properties with views affected by the development.

The Guidelines also note that other receptors could include people engaged in outdoor sport or recreation other than those involving an appreciation of the landscape, people travelling through the area, and people at their place of work. The latter are regarded as the least susceptible to changes in view.

The following definitions are used to categorise the sensitivity of receptors:

<sup>7</sup> *Guidelines for Landscape and Visual Impact Assessment* The Landscape Institute & Institute of Environmental Management & Assessment, 2002.

- High sensitivity receptors: those who repeatedly revisit the viewpoint to partake of the view. Such views are generally highly valued by the community;
  - Moderate sensitivity receptors: itinerant visitors (mostly tourists) to the viewpoint; and
  - Low sensitivity receptors: road users, workers, etc.
- 2.64. Residents are not included above because views from private property are not protected under planning law or other public policy except in so far as the zoning of the land implies certainty as to the type of development that may be permitted. Their rights are protected through the planning system whereby they are afforded the opportunity to object to any change of land use (or airspace). The EIA process does not assess the impacts of a project on the rights or values of individuals, but rather on the public collectively, and those rights and values are as expressed in legislation and planning policy. It is for this reason that EIAs do not address the effects of loss of views from private properties, land ownership, etc.

### **Changes in Visual Amenity**

- 2.65. Changes to the landscape and visual amenity of the ZVI are anticipated because of the Scheme.
- 2.66. The assessment of the impact of the Scheme on the visual amenity of the ZVI takes account of the scale of change resulting from the Scheme, the degree of contrast or integration resulting from the change, the duration and nature of the effect, the angle of view in relation to the main activity of the receptor, the distance of the viewpoint from the Scheme, the extent of the area over which the changes would be visible, and the number of people who may experience the views. The changes in visual amenity and the significance of those changes are described below for each of the viewpoints previously agreed with MEPA. It should be noted that some base photos (where relevant) include montages of permitted development that is under construction (or has yet to be constructed).





Viewpoint 1: near Preluna Hotel

2.67. View to South: Tigné Peninsula and Application Site.

Figure 2.18: Viewpoint 1 before and after the Scheme

Viewpoint 1	
Location	Near Preluna Hotel
Key features	Panoramic view across towards Tigné Peninsula and the Application Site. Typical seafront development rising to 7 or 8 storeys, presenting a regular skyline Moderate visual amenity, moderate intrinsic value.
Sensitive receptors	Users of the footpath for walking, sight seeing and recreation—tourists and locals: considerable numbers of moderate sensitive viewers. Road users - Low sensitive receptors.
Change to Visual Amenity	Skyline broken by the lower buildings of the Scheme and by the tower. (Also broken by the Fort Cambridge development.) The sense of scale and continuity afforded by the existing development is over-powered by the Scheme. The amenity is severely compromised. Magnitude of change is major.
Impact	A major change affecting a considerable number of low sensitivity viewers. Impact: Remains unchanged from former scheme (major)





**Viewpoint 2: Manoel Island**

2.68. View to North along Gzira front and Marsamxett Harbour towards Tigné Point and Application Site.

Figure 2.19: Viewpoint 2 before and after the Scheme

Viewpoint 2	
Location	Near bridge to Manoel Island.
Key features	Panoramic view of Gzira front and Marsamxett Harbour towards Tigné Point and Application Site. Typical seafront scene with relatively low rise development framing the harbour. Frame is penetrated by the Fort Cambridge development. Moderate visual amenity, moderate intrinsic value.
Sensitive receptors	Users of the footpath for walking, sight seeing and recreation—tourists and locals: considerable numbers of moderate sensitive viewers. Road users - Low sensitive receptors.
Change to Visual Amenity	Skyline broken by the Scheme tower. (Also broken by the Fort Cambridge development.) The sense of scale and continuity afforded by the existing development is interrupted by the tower located a considerable distance from the Fort Cambridge development. Because of the distance between the Scheme and the viewpoint the change is minor in magnitude.
Impact	A major change affecting a considerable number of low sensitivity viewers. Impact: Remains unchanged from former scheme (Minor)





**Viewpoint 3: Valletta Ferry Landing**

2.69. View to North-west: Manoel Island, Tigné Peninsula and Application Site.

Viewpoint 3	
Location	Near Valletta Ferry Landing
Key features	This is a panoramic view towards Tigné Peninsula and the Application Site across Marsamxett Harbour. Harbour view is framed by typical seafront development rising to 7 or 8 storeys, presenting a regular skyline punctured by the Fortina Hotel and the MIDI and Fort Cambridge developments. Moderate visual amenity, moderate intrinsic value.
Sensitive receptors	Users of the ferry: considerable numbers of moderate sensitive viewers.
Change to Visual Amenity	Skyline broken by the Scheme tower, but tends to complement the existing and committed high rises. Magnitude of change is minor.
Impact	A minor change affecting a considerable number of moderate sensitivity viewers. Impact: Remains unchanged from former scheme (Minor)

Figure 2.20: Viewpoint 3 before and after the Scheme





**Viewpoint 4: Smart City**

2.70. View to North-west: Med. Film Studios, Valletta, Tigné Peninsula and Application Site.

**Figure 2.21: Viewpoint 4 before and after the Scheme**

Viewpoint 4	
Location	Near Mediterranean Film Studios
Key features	Panoramic view across film studios / Three Cities towards Tigné Peninsula and the Application Site. Skyline comprising urban areas Moderate visual amenity, low intrinsic value.
Sensitive receptors	Residents, workers and visitors to Smart City: considerable numbers of moderate sensitive viewers.
Change to Visual Amenity	Skyline broken by the Scheme which, together with the Fort Cambridge and MIDI developments create a point of reference or focus). Magnitude of change is very minor.
Impact	A minor change affecting a considerable number of low moderate viewers. Impact: Remains unchanged from former scheme (Minor to not significant)



*Viewpoint 5: Bighi*

2.71. View to North-west: Valletta Peninsula.

Viewpoint 5	
Location	Bighi
Key features	Scheme is not visible from this viewpoint.

Figure 2.22: Viewpoint 5 before and after the Scheme





**Viewpoint 6: Vittoriosa**

2.72. View to View to North-west: Vittoriosa and Valletta Peninsula.

Viewpoint 6	
Location	Vittoriosa
Key features	Scheme is not visible from this viewpoint.

Figure 2.23: Viewpoint 6 before and after the Scheme



***Viewpoint 7: Triq Garibaldi***

2.73. View to South: Tigné Peninsula and Application Site.

Viewpoint 7	
Location	Triq Garibaldi near Addolorata Cemetery
Key features	Scheme is not visible from this viewpoint.

Figure 2.24: Viewpoint 7 before and after the Scheme





*Viewpoint 8: University*

2.74. View to South: Tigné Peninsula and Application Site.

Viewpoint 8	
Location	Near University Library
Key features	Scheme is not visible from this viewpoint.

Figure 2.25: Viewpoint 8 before and after the Scheme



**Viewpoint 9: Mdina Bastions**

2.75. View to South: Tigné Peninsula and Application Site.

Viewpoint 9	
Location	Mdina Bastion
Key features	Panoramic view of Central Plain and distant view of St Julians - Three Cities conurbation. Moderate visual amenity, moderate intrinsic value.
Sensitive receptors	Visitors to the Bastion Viewpoint: moderately sensitive viewers.
Change to Visual Amenity	With a 30-storey building the change to the visual amenity was a transient distant view of Scheme; changes barely noticeable. Considering that the Scheme has been lowered it is now likely to be not visible at all from this viewpoint.

Figure 2.26: Viewpoint 9 before and after the Scheme





**Viewpoint10: Triq it-Torri**

**2.76. View to South: Tigné Peninsula and Application Site.**

Viewpoint 10	
Location	Near entrance to Villa Drago
Key features	Transient view sandwiched between existing low rise buildings. Skyline / view framed by latter buildings; the Norfolk Pine creates a sense of scale. Low visual amenity because of current state of buildings, moderate intrinsic value.
Sensitive receptors	Users of the footpath: considerable numbers of moderate sensitive viewers. Road users - Low sensitive receptors.
Change to Visual Amenity	Skyline broken by the lower buildings of the Scheme and by the tower. The sense of scale and continuity afforded by the existing development is over-powered by the Scheme. Magnitude of change is major.
Impact	A major change affecting a considerable number of moderate / low sensitivity viewers. Impact: Remains unchanged from former scheme (Major)

Figure 2.27: Viewpoint 10 before and after the Scheme





**Viewpoint 11: Is-Sur ta' I- Inglizi**

2.77. View to South: Tigné Peninsula and Application Site.

Viewpoint 11	
Location	Near is-Sur ta' I- Inglizi
Key features	This is a panoramic view across Marsamxett Harbour towards Tigné Point and the Application Site. Typical seafront development rising to 7 or 8 storeys, presenting a regular skyline Moderate visual amenity, moderate intrinsic value.
Sensitive receptors	Users of the footpath for walking, sight seeing and recreation—tourists and locals: considerable numbers of moderate sensitive viewers. Road users - Low sensitive receptors.
Change to Visual Amenity	Skyline broken by the Fortina Hotel, and the MIDI and Fort Cambridge development. The Scheme sits behind all of these developments, and although it extends the area over which high rise development predominates, it tends to act in a consolidating role. Magnitude of change is minor.
Impact	A minor change affecting a considerable number of moderately sensitivity viewers. Impact: Remains unchanged from former scheme (Minor) s

Figure 2.28: Viewpoint 11 before and after the Scheme







- 2.78. The impact of the Scheme on the visual amenity of the areas portrayed in the above photographs and photomontages from the previously agreed viewpoints is largely of major to minor significance. Such impacts are by-and-large unavoidable given the moderate to high amenity value and, in many cases, the moderate intrinsic value of the landscape, especially when coupled with viewers that are usually deemed to be of at least moderate sensitivity.

## **PROPOSED MITIGATION MEASURES**

- 2.79. It is difficult to mitigate the effects of the Scheme on the visual amenity to any greater extent than the measures already incorporated into the design as the Scheme evolved through the iterative process of this EIA / scheme design and discussions between the applicant and MEPA.

## **RESIDUAL IMPACTS**

- 2.80. The residual impacts would be the same as the unmitigated impacts.

## **FUTURE MONITORING REQUIREMENTS**

- 2.81. Nil.

**Table 2.2: Summary of Impacts on Landscape and Visual Amenity**

		Nature, Scale and Type of Impact						Policy Importance	Probability of impact occurring	Significance of Impact	Proposed Mitigation Measures	Significance of Residual Impact
Asset Impacted	Beneficial/ Adverse	Const'n / Oper'n	Extent of impact (Nat/Local/Site)	Extent of impact (Nat/Local/Site)	S term/ L term	Perm/ Temp	Reverse/ Irrevers.	(Inter/National/Local)	(Likely, Unlikely, Remote Uncertain)	(Major, Minor, Not significant)		(Major, Minor, Not significant)
<b>Wind</b>												
Pedestrian Safety	Adverse	Oper'n	Site	Direct	L term	Perm	Revers.	Local	Likely	Minor	Appropriate screening (to be evaluated)	Not significant
<b>Shadow</b>												
Shadow	Adverse	Constr' / Oper'n	Local	Direct	L term	Perm	Revers.	Local	Likely	Not significant	None	Not significant
<b>Visual Amenity</b>												
Viewpoint 1: Near Preluna Hotel	Adverse	All	Local	Direct	L Term	Perm	Revers	Local	Likely	Major	None	Major
Viewpoint 2: Manoel Island Bridge	Adverse	All	Local	Direct	L term	Perm	Revers.	Local	Likely	Minor	None	Minor
Viewpoint 3: Valletta Ferry Landing	Adverse	All	Local	Direct	L term	Perm	Revers.	Local	Likely	Minor	None	Minor
Viewpoint 4: Smart City	Adverse	All	Local	Direct	L term	Perm	Revers.	Local	Likely	Minor – Not significant	None	Minor – Not significant
Viewpoint 5: Bighi	Not visible											
Viewpoint 6: Vittoriosa	Not visible											
Viewpoint 7	Not visible											

		Nature, Scale and Type of Impact						Policy Importance	Probability of impact occurring	Significance of Impact	Proposed Mitigation Measures	Significance of Residual Impact
Asset Impacted	Beneficial/ Adverse	Const'n / Oper'n	Extent of impact (Nat/Local/Site)	Extent of impact (Nat/Local/Site)	S term/ L term	Perm/ Temp	Reverse/ Irrevers.	(Inter/National/Local)	(Likely, Unlikely, Remote Uncertain)	(Major, Minor, Not significant)		(Major, Minor, Not significant)
Triq Garibaldi												
Viewpoint 8: University	Not visible											
Viewpoint 9: Mdina Basytions	Adverse	All	Local	Direct	L term	Perm	Revers.	Local	Likely	Minor – Not significant	None	Minor – Not significant
Viewpoint 10: Triq it-Torri	Adverse	All	Local	Direct	L term	Perm	Revers.	Local	Likely	Major	None	Major
Viewpoint 11: Is-Sur ta' l-inglizi	Adverse	All	Local	Direct	L term	Perm	Revers.	Local	Likely	Minor	None	Minor

**PA 01191/05  
SLIEMA TOWNSQUARE  
SLIEMA**

## **ENVIRONMENTAL PLANNING STATEMENT – UPDATE**

### **APPENDIX I – Photomontages, Base Photos, and Shadowing**

**UPDATE TO  
Version I: June 2007**

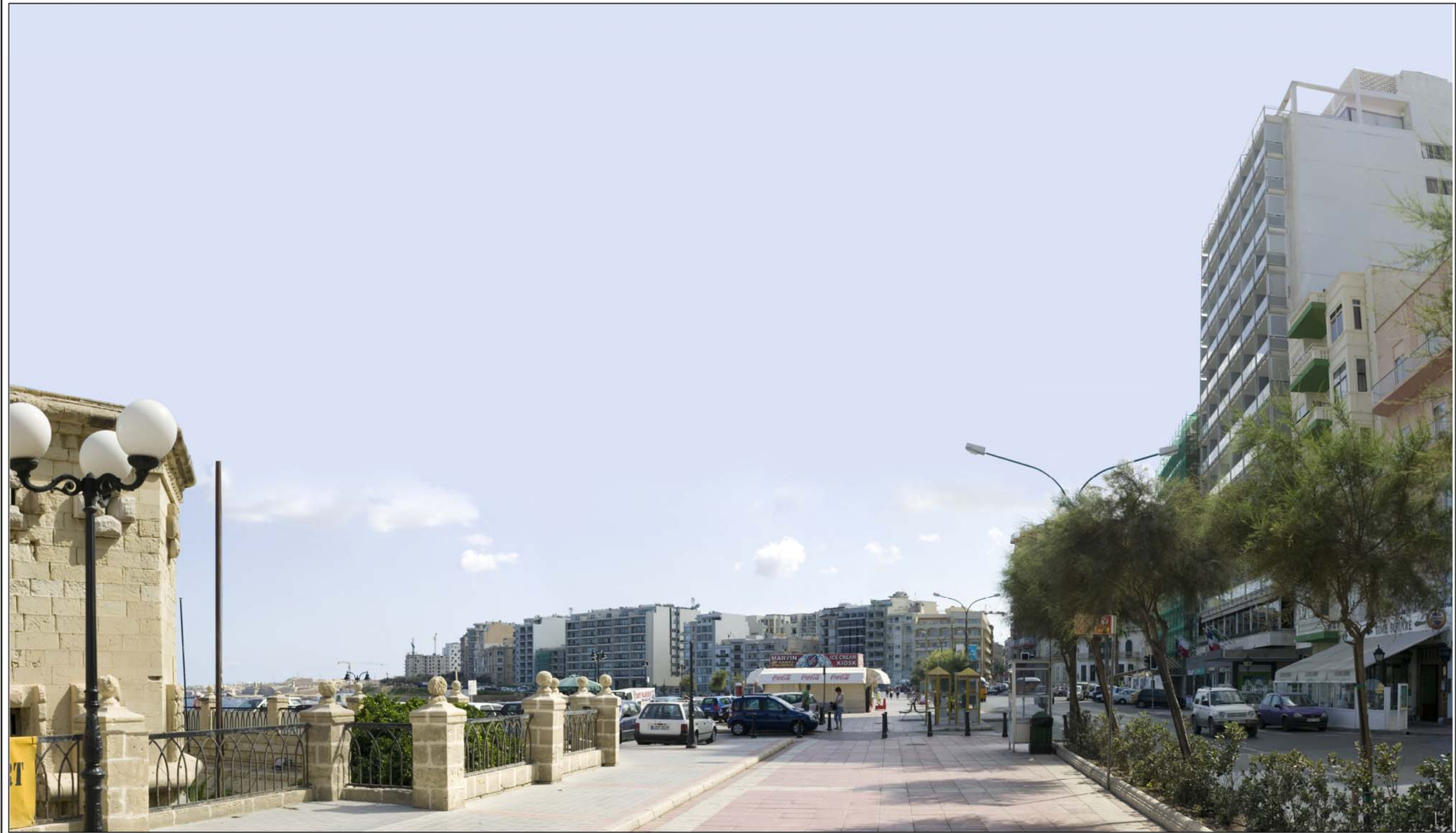
**adi**  
**ASSOCIATES**  
ENVIRONMENTAL  
CONSULTANTS





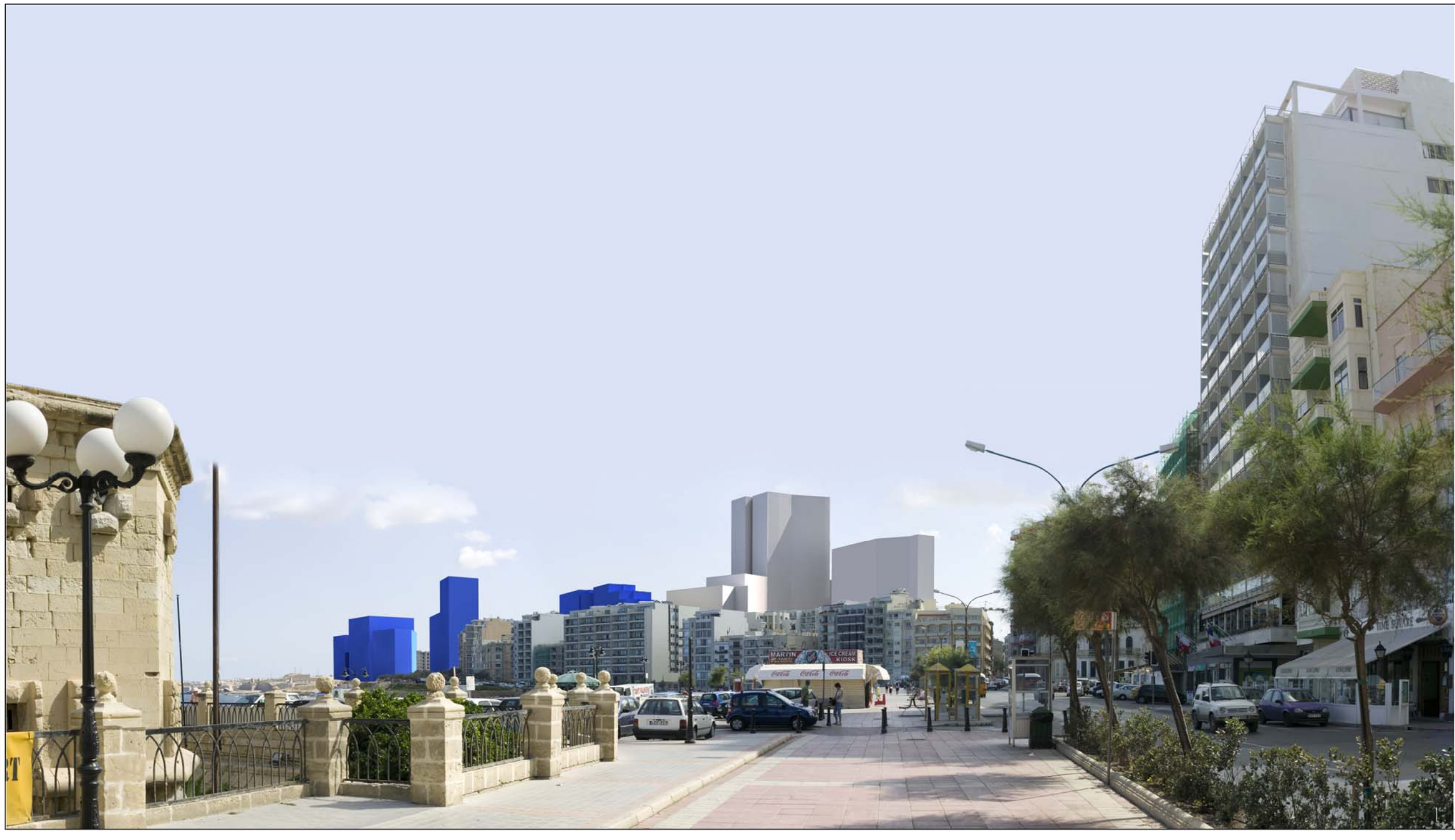
**Viewpoint 1: Base Photo (near Preluna Hotel)**

EXISTING VIEW





**Viewpoint 1: Photomontage**



**Viewpoint 2: Base Photo (Manoel Island)**





**Viewpoint 2: Photomontage**



**Viewpoint 3: Base photo (Valletta Ferry Landing)**





**Viewpoint 3: Photomontage**





**Viewpoint 4: Base photo (Smart City)**





**Viewpoint 4: Photomontage**





**Viewpoint 5: Base Photo (Bighi)**





**Viewpoint 6: Base photo( Vittoriosa)**



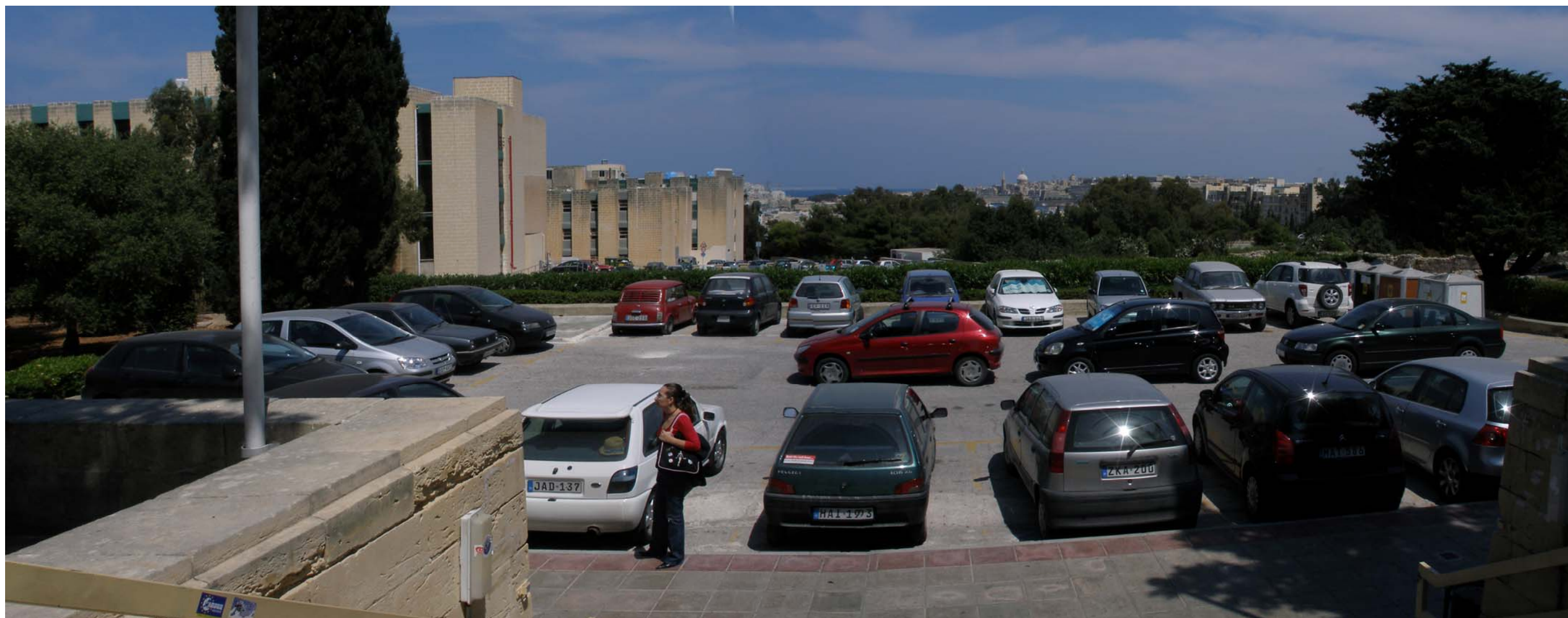


**Viewpoint 7: Base photo (Triq Garibaldi)**





**Viewpoint 8: Base photo (University)**





**Viewpoint 9: Base photo (Mdina Bastions)**





**Viewpoint I0: Base photo (Triq it-Torri)**





**Viewpoint 10: Photomontage**





**Viewpoint 11: Base photo (Is-Sur ta' l- Inglizi)**





**Viewpoint 11: Photomontage**







**Figure 1: Shadowing: 21 November: Traditional Housing (1 hour after sunrise)**



**Figure 2: Shadowing: 21 November: Traditional Housing (noon)**





**Figure 3: Shadowing: 21 November: Traditional Housing (1 hour before sunset)**



**Figure 4: Shadowing: 21 November: Scheme (1 hour after sunrise)**





**Figure 5: Shadowing: 21 November: Scheme (noon)**





**Figure 6: Shadowing: 21 November: Scheme (1 hour before sunset)**



**Figure 7: Shadowing: 21 December: Traditional Housing (1 hour before sunset)**





**Figure 8: Shadowing: 21 December: Traditional Housing (noon)**



**Figure 9: Shadowing: 21 December: Traditional Housing (1 hour before sunset)**





**Figure 10: Shadowing: 21 December: Scheme (1 hour after sunrise)**



**Figure 11: Shadowing: 21 December: Scheme (noon)**





**Figure 12: Shadowing: 21 December: Scheme (1 hour before sunset)**





**Figure 13: Shadowing: 21 January: Traditional Housing (1 hour after sunrise)**



**Figure 14: Shadowing: 21 January: Traditional Housing (noon)**



**Figure 15: Shadowing: 21 January: Traditional Housing (1 hour before sunset)**





**Figure 16: Shadowing: 21 January: Scheme (1 hour after sunrise)**



**Figure 17: Shadowing: 21 January: Scheme (noon)**





**Figure 18: Shadowing: 21 January: Scheme (1 hour before sunset)**





**Figure 19: Shadowing: 21 May: Traditional Housing (1 hour after sunrise)**



**Figure 20: Shadowing: 21 May: Traditional Housing (noon)**



**Figure 21: Shadowing: 21 May: Traditional Housing (1 hour before sunset)**





**Figure 22: Shadowing: 21 May: Scheme (1 hour after sunrise)**



**Figure 23: Shadowing: 21 May: Scheme (noon)**





**Figure 24: Shadowing: 21 May: Scheme (1 hour before sunset)**





**Figure 25: Shadowing: 21 June: Traditional Housing (1 hour after sunrise)**



**Figure 25: Shadowing: 21 June: Traditional Housing (noon)**



**Figure 25: Shadowing: 21 June: Traditional Housing (1 hour before sunset)**





**Figure 26: Shadowing: 21 June: Scheme (1 hour after sunrise)**



**Figure 26: Shadowing: 21 June: Scheme (noon)**





**Figure 28: Shadowing: 21 June: Scheme (1 hour before sunset)**





**Figure 29: Shadowing: 21 July: Traditional Housing (1 hour after sunrise)**



**Figure 29: Shadowing: 21 July: Traditional Housing (noon)**



**Figure 30: Shadowing: 21 July: Traditional Housing (1 hour before set)**





**Figure 31: Shadowing: 21 July: Scheme (1 hour after sunrise)**



**Figure 32: Shadowing: 21 July: Scheme (noon)**





**Figure 33: Shadowing: 21 July: Scheme (1 hour before sunset)**





### **Appendix 3: Update to the EPS prepared in April 2011**

PA 01191/05  
SLIEMA TOWNSQUARE  
SLIEMA

## Environmental Planning Statement - UPDATE

Update to EPS dated April 2007

adi  
ASSOCIATES  
ENVIRONMENTAL  
CONSULTANTS

**Report Reference:**

Adi Associates Environmental Consultants Ltd, 2011. Sliema Townsquare.  
Update to the Environmental Planning Statement prepared in support of  
development permit application No. PA 01191/05. San Gwann, April 2011;  
vii + 12pp

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## Quality Assurance

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### EPS Update

April 2011

Report for: Sliema Townsquare Limited

### Revision Schedule

Rev	Date	Details	Prepared by:	Report Checked by:	Approved by:
0	April 2011	Submission to MEPA	Rachel Xuereb Director	Adrian Mallia Director	Kevin Morris Director

File ref: G:\ADI\EIA\STSAir Quality\Air\_Quality\_Update\_FINAL\_19 04 2011.doc



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Kappara Business Centre  
113 Triq Birkirkara  
San Gwann SGN 4197

Tel. / Fax: 21378172 - 77 – 80  
Email: [info@adi-associates.com](mailto:info@adi-associates.com)  
Web: [www.adi-associates.com](http://www.adi-associates.com)





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# 1. INTRODUCTION

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## PURPOSE OF THE UPDATE

- 1.1. An Environmental Planning Statement (EPS) was prepared on behalf of Townsquare Sliema Ltd, to support planning application PA 01191/05 for the redevelopment of the former Union Club site in Sliema into a high rise residential and office complex with shopping / food and beverage / leisure facilities and parking (hereinafter referred to as the Scheme). Planning application PA 01191/05 was validated by the Malta Environment & Planning Authority (MEPA) on 21<sup>st</sup> March 2005. The EPS was certified by MEPA in August 2007 and submitted for public consultation in September 2007.
- 1.2. In 2010, an EPS Update was presented to MEPA after discussions between MEPA and the Applicant resulted in changes to the building heights of the development. The EPS Update included an updated project description together with an assessment of impacts related to visual issues, shadowing, and wind.
- 1.3. Following further discussions between MEPA and the Applicant in February 2011, MEPA recommended that the Applicant further investigates the impacts of the Scheme on air quality. This second EPS Update includes a revised air quality impact assessment that is based on air quality impact parameters defined by MEPA. It is noted that at the time of writing the EPS in 2007 and the current EPS Update, new EU legislation on air quality has emerged and there have been significant attempts both at EU level and nationally to address the issue of traffic emissions.

## 2. LEGISLATION AND POLICY REVIEW

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### INTRODUCTION

- 2.1. This Chapter provides an overview of the current legislative requirements related to air quality, together with a review of the policy direction in relation to vehicle emissions at both the European Union and the local level. This section has been updated due to significant changes between 2007 and today that could have an impact on future emissions especially from vehicles.

### AIR QUALITY LEGISLATION

#### European Legislation

- 2.2. European legislation on air quality falls under Directive 2008/50/EC on ambient air quality and cleaner air for Europe. This Directive entered into force on the 11<sup>th</sup> June 2008. It merges four Directives and one Council Decision into a single Directive on air quality and sets standards and target dates for reducing concentrations of fine particles (PM<sub>2.5</sub>).
- 2.3. The Directive repeals the following legislation on air quality:
- Directive 96/62/EC (Ambient Air Quality Assessment and Management);
  - Directive 1999/30/EC (relating to limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air);
  - Directive 2000/69/EC (relating to limit values for benzene and carbon monoxide in ambient air); and
  - Directive 2002/3/EC (relating to ozone in ambient air).
- 2.4. Directive 2008/50/EC has not yet been transposed into Maltese legislation. Notwithstanding, Malta is still required to comply with the requirements of this Directive.

#### Maltese Legislation

- 2.5. Since Directive 2008/50/EC has not yet been transposed, the local air quality legislation is based on the preceding Directives:
- **Legal Notice 216 of 2001:** *Ambient Air Quality Assessment and Management Regulations, 2001* defines and establishes objectives for ambient air quality in Malta that are designed to avoid, prevent, or reduce harmful effects on human health and the environment as a whole. They establish common methods and criteria for the assessment of ambient air quality, and provide for public dissemination of information on ambient air quality. The Regulations require assessment and monitoring of air quality, the establishment of zones and agglomerations, and the preparation of action plans as appropriate



- **Legal Notice 224 of 2001 (as amended by LN 231 of 2004):** *Limit values for Sulphur Dioxide, Nitrogen Dioxide and Oxides of Nitrogen, Particulate Matter and Lead in Ambient Air Regulations, 2001* sets out air quality standards for Particulate Matter (PM<sub>10</sub>), SO<sub>2</sub>, NO<sub>2</sub> and NOx. Revised limit values have since been set through Directive 2008/50/EC<sup>1</sup>, although these have not yet been transposed into national legislation;
- **Legal Notice 163 of 2002:** *Limit Values for Benzene and Carbon Monoxide in Ambient Air Regulations, 2002* sets out air quality standards for Benzene and Carbon Monoxide;
- **Legal Notice 11 of 2003:** *Ozone in Ambient Air Regulations* defines and establishes objectives and target values for concentrations of ozone in ambient air in Malta in order to avoid, prevent, or reduce harmful effects on human health and the environment.

## VEHICLE EMISSIONS: POLICY DIRECTION

- 2.6. The following section provides an overview of current and planned initiatives that aim to improve air emissions from vehicles.

### European Level

#### *Euro 5 and Euro 6 Standards*

- 2.7. In 2007, the European Commission (EC) introduced two new standards in order to improve the level of emissions from light vehicles. The Euro 5 and Euro 6 standards aim to reduce engine emissions, in particular for particulate matter (PM) and nitrogen oxides (NOx) emissions from diesel cars. Regulation (EC) No 715/2007 sets out the implementation timeframes and the limit values for these two standards.
- 2.8. The Euro 5 standard came into force on 1 September 2009. As of 1 January 2011, Member States cannot allow the registration and sale of new vehicles that are not compliant with this standard. This standard improves PM emissions from diesel engines by 80 per cent over the Euro 4 standard, see Table 2.1.

**Table 2.1: Emissions Standards in relation to PM and NOx**

Emissions standard (year of entry into force)	Particulate matters (PM) (mg/km)		Oxides of nitrogen (NOx) (mg/km)	
	Diesel	Petrol	Diesel	Petrol
Euro 2 (1996)	80-100	-	-	-
Euro 3 (2000)	50	-	500	150
Euro 4 (2005)	25	-	250	80
Euro 5 (2009)	5	5	180	70
Euro 6 (2014)	5	5	80	70

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<sup>1</sup> Directive 2008/50/EC of the European Parliament and of the Council on ambient air quality and cleaner air for Europe. It repealed Directives 96/62/EC, 1999/30/EC, 2000/69/EC and 2002/3/EC as from 11 June 2010.

Source: EurActiv.com, Euro 5 emissions standards for cars, Last accessed 11 April 2011 from <http://www.euractiv.com/en/transport/euro-5-emissions-standards-cars/article-133325>

- 2.9. The Euro 6 standard will enter into force in September 2014 and shall be applicable as from September 2015 to all new cars that are registered and purchased in Member States. This standard sets significantly lower limits for NOx emissions from diesel cars compared to the Euro 5 standard, see **Table 2.1**.

### *Green vehicles strategy*

- 2.10. The green vehicles strategy was presented by the EC in April 2010<sup>2</sup>. It aims at encouraging the development and market uptake of clean and energy efficient vehicles, thereby reducing the environmental impact of road transport. This will be achieved by promoting clean and energy efficient vehicles that are based on conventional internal combustion engines and facilitating the deployment of breakthrough technologies in ultra-low-carbon vehicles.
- 2.11. The strategy includes a number of actions that the EC will undertake such as:
- Preparing measures to implement Regulation (EC) No 443/2009<sup>3</sup> by 2011;
  - Presenting a proposal by 2011 to reduce fuel consumption impacts of mobile air conditioning systems;
  - Ensuring that CO<sub>2</sub> and pollutant emissions are reduced under real-world driving conditions;
  - Promoting additional measures that may help to decrease CO<sub>2</sub> and pollution emissions from road transport such as eco-driving and Intelligent Transport Systems; and
  - Presenting in 2010 guidelines on financial incentives for consumers to buy green vehicles.

### *Transport White Paper*

- 2.12. The Transport White Paper is a roadmap presented by the EC of 40 initiatives for the next decade. It aspires to build a competitive transport system that will increase mobility, remove major barriers in key areas, and fuel growth and employment. The White Paper includes the following long-term goals to:
- Halve the use of 'conventionally-fuelled' cars in urban transport by 2030;
  - Phase out 'conventionally-fuelled' cars in cities by 2050; and

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<sup>2</sup> COM(2010)186 final

<sup>3</sup> Regulation (EC) No 443/2009 on setting emission performance standards for new passenger cars as part of the Community's integrated approach to reduce CO<sub>2</sub> emissions from light-duty vehicles.

- Achieve CO<sub>2</sub>-free city logistics in major urban centres by 2030. This would also help to substantially reduce other harmful emissions.

2.13. The White Paper was launched in March 2011.

#### ***Revision of the European Union Air Quality Policy***

- 2.14. In 2005, the European Commission (EC) launched the *Thematic Strategy on Air Pollution* and the *Clean Air For Europe (CAFE)* programme. The overall objective was to *achieve levels of air quality that do not result in unacceptable impacts on, and risks to, human health and the environment*. Six years later, the Commission has started discussions on reviewing its air policy with particular emphasis on the National Emission Ceilings Directive.
- 2.15. The Commission recognises that current policy efforts, at EU and national level, have not fully delivered the expected results. The limit values of PM and NO<sub>2</sub> are exceeded in many urban areas whereas global emissions of NO<sub>x</sub> are not decreasing as much as expected. Reasons for this include the increase in transport volume and the slower turnover of vehicle fleets. For this reason, the EC has started work on a new clean air strategy to be adopted by no later than 2013. At this stage, a working document<sup>4</sup> has suggested short-term policy actions such as:
- addressing the "real world" emissions, including speeding up the adoption of a revised test cycle for the type approval of vehicles signalled in the Communication a European Strategy on Clean and Energy Efficient Vehicles; and
  - promoting the upgrading of vehicles to the highest possible standards based on innovative or already available and tested retrofit technologies and also building on the experience on retrofitting in the Member States.
- 2.16. The review of the Air Quality Policy aims to produce a robust Clean Air package that updates existing policies and directives (including the National Emission Ceilings Directive) according to latest science and outlines further cost-effective measures.

### **National**

#### ***Vehicle Registration Tax and Circulation Tax***

- 2.17. During the Budget Speech for 2009, a new vehicle registration taxation system was announced that encourages the purchase of smaller vehicles that emit lower levels of pollutants and apply cleaner technologies. This tax is payable upon first registration of a vehicle in Malta and is based on a vehicle's CO<sub>2</sub> emissions, PM<sub>10</sub> emissions (for diesel engines), age, and value. Under the new system, bigger and more polluting vehicles pay more registration tax than the previous system. The new tax system for private vehicles (including self-drive, lease and garage-hire cars, and motorcycles) was introduced in January 2009.

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<sup>4</sup> SEC(2011)342



- 2.18. The Vehicle Annual Circulation Tax was also reformed in 2009. The tax rate is constant for the first few years and then increases marginally to encourage the replacement of older vehicles. Under the new system, vehicles registered prior to January 2009 have a fixed licence rate for the first six years. It then increases by 13-14 per cent after the sixth year and by 1-4 per cent every year after. This tax rate is based on fuel type, year of manufacture and engine size.
- 2.19. For vehicles registered after January 2009, the annual circulation tax is based on fuel type, CO<sub>2</sub> emissions, PM<sub>10</sub> emissions (for diesel engines) and vehicle age. The tax rate is constant for the first five years. It then increases by 25 per cent after the fifth year and by 10 per cent each year after.
- 2.20. With regards to commercial vehicles registered after 1<sup>st</sup> January 2010, the annual road tax is based on the weight and age of the vehicle. As from January 2014, the new licence fees shall also be paid for commercial vehicles registered prior to 1<sup>st</sup> January 2010.

#### ***Vehicle Scrapping Scheme***

- 2.21. In November 2010, the Government of Malta introduced the vehicle scrapping scheme. The aim of this scheme is to encourage people to scrap (rather than sell) vehicles older than ten years, when buying a new car. The new car must have a Euro 5 engine, must be shorter than 4.46m, and have CO<sub>2</sub> emission levels that are less than 150g/km. The car scrapping scheme awards buyers of new cars a maximum of €2,000 and is limited to 2,000 vehicles.

#### ***MEPA Air Quality Plan for the Maltese Islands***

- 2.22. The MEPA Air Quality Plan, published in January 2010, aims to reduce PM<sub>10</sub> and NO<sub>2</sub> emissions in line with annual limit values set in Directive 1999/30/EC. The Plan acknowledges that the major sources of air pollution on the Maltese Islands are power generation and traffic. With respect to the latter, the Plan sets out a number of measures to achieve the following goals:
- Reduction in vehicle emissions;
  - Encouraging modal shift;
  - Reduce traffic impact of new developments;
  - Managing the road network; and
  - Promoting cleaner vehicle technologies.
- 2.23. The measures aim to reduce PM<sub>10</sub> concentrations in order to comply with PM<sub>10</sub> daily limit values by June 2011. These are split into short-term and medium-term measures. Short-term measures are defined as those that *should be implemented immediately once approved and subject to budgetary allocation where this is required, by the end of 2010*. Medium-term measures *should start later on in 2010 to produce the required results by mid-2011*. This is under the *proviso* that appropriate planning and funding is dedicated to each and every measure.

2.24. Although most measures aim to reduce transport emissions, the following short-term and long-term measures are noted:

- Short-term measures:
  - Measure 2: Enforcement of the regulation of vehicle exhaust from polluting trucks, cars, and buses;
  - Measure 7: Restrict circulation of public transport vehicles to Euro 3 buses in localities where limit values are being exceeded; and
  - Measure 12: Fiscal incentives for the acquisition of cleaner technology vehicles.
- Long-term measures:
  - Measure 1: Reform Public Transport;
  - Measure 4: Increase provision and use of park and ride facilities (Sliema is highlighted as a particularly sensitive area); and
  - Measure 14: Encourage local car dealers to promote the sale of cleaner technology vehicles. This would work well coupled with the new vehicle registration tax regime (Budget 2008).

### 3. AIR QUALITY ASSESSMENT

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#### Introduction

- 3.1. The air quality assessment presented in the EPS (2007) was based on the DETR traffic emissions mathematical model<sup>5</sup>. The model is a screening tool that provides estimates of PM<sub>10</sub> and NO<sub>x</sub> conditions at varying distances from the road. It presents the results in daily / hourly concentrations.
- 3.2. The DETR model is just a screening tool that gives an indication of potential impacts from traffic. Following discussions between MEPA and the Applicant, it was decided to carry out a more accurate study of the air quality impacts using appropriate modeling software called BREEZE Roads.
- 3.3. BREEZE Roads is an air dispersion modeling suite that predicts air quality impacts of a number of pollutants including carbon monoxide (CO), NO<sub>2</sub> and PM. It is specifically designed to model pollutant concentrations that are emitted from moving and idling motor vehicles at or alongside roadways and roadway intersections.
- 3.4. The air quality modeling was undertaken by Mr David Harvey of ADM Ltd (UK) and assisted by Adi Associates Environmental Consultants Ltd.

#### Methodology and Assumptions

- 3.5. In order to accurately model traffic emissions, the BREEZE Roads model needs to be calibrated to local conditions. This was done according to the UK guidance document *Local Air Quality Management – Technical Guidance LAQM.TG(09)* published by DEFRA<sup>6</sup>. The model was calibrated with traffic and air emissions data from Valley Road, Birkirkara. Calibration data was derived from:
  - 24-hour traffic counts over a period of two weeks (in February – March 2011) to estimate the Annual Average Daily Traffic (AADT), average speed and percentage HGVs<sup>7</sup>; and
  - Monthly NO<sub>2</sub> emissions for 2009 from the BKR1 diffusion tube station to estimate the annual average NO<sub>2</sub> levels.
- 3.6. In addition, the average age of Maltese vehicles (both cars and HGVs) was required so that the appropriate vehicle emissions factors are applied. Emission factors are used in air quality models to allow for predictions to be made of operations that are currently not in existence, or which are expected to undergo significant change in the future. In this respect, the factors are used to predict emissions from future vehicle fleet compositions.

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<sup>5</sup> Highways Agency (UK) Design Manual for Roads and Bridges.

<sup>6</sup> Department for Environment, Food and Rural Affairs

<sup>7</sup> Heavy Goods Vehicles > 3.5 tonnes



- 3.7. The emissions factors used in the model are produced by DEFRA and hence mirror the past and present vehicle fleet in the UK. The UK average vehicle age is seven years, compared to Malta's 13.8 years<sup>8</sup> as at the end of 2010. This implies that currently, the Maltese emission factors are seven years behind those of the UK. This means that the emission factors of the current fleet (2010) are equivalent to the UK emission factors of 2003. It is, however, noted that the current (as at end November 2010) average age for motor vehicles (i.e. cars only) is 12.2<sup>9</sup>.
- 3.8. Other data was required for both the model calibration and for modelling the impacts of the Scheme. These consisted of:
- 2009 NO<sub>2</sub> and PM<sub>10</sub> levels at an urban background site;
  - 2009 meteorological data;
  - AADT along Triq ix-Xatt ta' Qui-Si-Sana for the different modelling scenarios;
  - Percentage HGVs along Triq ix-Xatt ta' Qui-Si-Sana for all scenarios; and
  - Annual average speeds along Triq ix-Xatt ta' Qui-Si-Sana for all scenarios.
- 3.9. Air quality data for 2009 from an urban background site was provided from the Zejtun Air Monitoring Station at Gnien San Girgor. It is noted that the model assumes that the background concentrations remain the same in the scenario years.
- 3.10. Two scenarios were developed for the Scheme. The AADT flows along Triq ix-Xatt ta' Qui-Si-Sana were derived from weekend AM peak hour flows extracted from the TIS Update<sup>10</sup> to present a worst-case scenario:
- Scenario 1 (2017 without development): 24,444 vehicles; and
  - Scenario 2 (2017 with development): 28,874 vehicles.
- 3.11. Scenario 1 comprises 2017 base network traffic, together with traffic generated by the Fort Cambridge and MIDI developments. It is noted that while traffic data for the Scheme, Fort Cambridge and MIDI have been retained as per the 2007 EPS and TIS, Qui-Si-Sana Car Park data has been excluded because this development has been abandoned.
- 3.12. For all scenarios, it was assumed that the percentage HGVs passing along Triq ix-Xatt ta' Qui-Si-Sana is 5.1 per cent. This is based on the percentage of HGVs on the

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<sup>8</sup> NSO, Email Communication, 9 March 2011.

<sup>9</sup> Transport Malta, E-mail Communication, April 2011

<sup>10</sup> Adi Associates Environmental Consultants Ltd, David V. Camilleri 2007. Sliema Townsquare. Update to the Traffic Impact Statement prepared in support of development permit application No. PA 01191/05. San Gwann, September 2007; 27pp.

Maltese roads as at end 2010<sup>11</sup>. On the other hand, the average speed along Triq ix-Xatt ta' Qui-Si-Sana was set at 30km/hr<sup>12</sup> for both scenarios.

- 3.13. Two sensitive receptors were identified. At each receptor, the emission values of NO<sub>2</sub> and PM<sub>10</sub> was modelled for both scenarios. The chosen receptors are pedestrians along Triq ix-Xatt ta' Qui-Si-Sana and users of Gnien George Bonello du Puis.

#### *Assessment Criteria*

- 3.14. Air Quality Impact descriptors for PM<sub>10</sub> and NO<sub>2</sub> are based on the change in the annual mean concentrations. Table 3.2 sets out the descriptors of change in the context of traffic emissions to air.

**Table 3.2: Air impact descriptors of changes in annual mean NO<sub>2</sub> and PM<sub>10</sub> concentrations<sup>13</sup>**

Magnitude of change (significance descriptor)	Annual mean
Large (major)	$\Delta[P] > 4 \mu\text{g}/\text{m}^3$
Medium (moderate)	$2 \mu\text{g}/\text{m}^3 < \Delta[P] \leq 4 \mu\text{g}/\text{m}^3$
Small (slight)	$0.4 \mu\text{g}/\text{m}^3 \leq \Delta[P] \leq 2 \mu\text{g}/\text{m}^3$
Imperceptible (negligible)	$\Delta[P] < 0.4 \mu\text{g}/\text{m}^3$

#### **Results**

- 3.15. The results for each sensitive receptor are shown in Tables 3.3 and 3.4. These are based on the scenario where the average vehicle age in Malta and the UK is identical. This is based on the assumptions described above namely that as a result of EU and local government initiatives to improve air quality and vehicle emissions, together with the fact that after September 2015, all new cars sold in Member States must be Euro 6 compliant, there will be a significant improvement in the vehicle fleet. This will result in an aggressive vehicle fleet replacement process with the average vehicle age improving each year until it reaches seven years by 2017.

**Table 3.3: Predicted emissions at the public garden (Gnien George Bonello du Puis) assuming an average vehicle age of 7 years**

	2017 Baseline ( $\mu\text{g}/\text{m}^3$ )	2017 with Development ( $\mu\text{g}/\text{m}^3$ )	Change ( $\mu\text{g}/\text{m}^3$ )	Impact
Total Predicted NO <sub>2</sub>	24.6	25.6	1.0	slight
Total Predicted PM <sub>10</sub>	29.3	29.5	0.2	negligible

<sup>11</sup> NSO, Email Communication, 2 March 2011.

<sup>12</sup> Transport Malta, Email Communication, 2 March 2011.

<sup>13</sup> These criteria were provided by MEPA in Terms of Reference for EIAs undertaken in 2010.

**Table 3.4: Predicted emissions at Triq ix-Xatt ta' Qui-Si-Sana assuming an average vehicle age of 7 years**

	2017 Baseline ( $\mu\text{g}/\text{m}^3$ )	2017 with Development ( $\mu\text{g}/\text{m}^3$ )	Change ( $\mu\text{g}/\text{m}^3$ )	Impact
Total Predicted $\text{NO}_2$	31.5	33.8	2.3	moderate
Total Predicted $\text{PM}_{10}$	30.9	31.5	0.6	slight

- 3.16. At the Gnien George Bonello du Puis sensitive receptor, the additional 4,430 vehicles result in a  $1.0\mu\text{g}/\text{m}^3$  increase in  $\text{NO}_2$  emissions and a  $0.2\mu\text{g}/\text{m}^3$  increase in  $\text{PM}_{10}$  emissions. The increase in  $\text{NO}_2$  emissions is considered of slight significance whereas that of  $\text{PM}_{10}$  is considered as negligible, in accordance with the criteria set out in Table 3.2.
- 3.17. As for pedestrians along Triq ix-Xatt ta' Qui-Si-Sana, the Scheme traffic will result in increases of  $2.3\mu\text{g}/\text{m}^3$  in  $\text{NO}_2$  emissions and of  $0.6\mu\text{g}/\text{m}^3$  in  $\text{PM}_{10}$  emissions. The increase in  $\text{NO}_2$  emissions is considered of moderate significance whereas that of  $\text{PM}_{10}$  is considered of slight significance.
- 3.18. A second scenario was also modelled where the average age of Maltese vehicles by 2017 does not reach the UK 7 year figure but remains at 10 years. This is also in line with the Government's car scrapping scheme that targets vehicles that are 10 years or more. It is noted that policy papers such as the Air Quality Plan do not contain any targets with regards to vehicle age, so the assessment relies on certain assumptions. This scenario therefore assesses the impacts of the Scheme assuming that the age gap between UK and Maltese vehicles reduces from seven to three years. This means that if by 2017, the UK average vehicle age remains at 7 years, the Maltese vehicle average age will decrease from the current 14 to 10 years.
- 3.19. The results, shown in Tables 3.5 and 3.6, demonstrate that the impact significance of the increase in  $\text{NO}_2$  and  $\text{PM}_{10}$  emissions, for both sensitive receptors, in the equivalent average vehicle age scenario and the three-year gap scenario is the same.

**Table 3.5: Predicted emissions at public garden assuming an average vehicle age of 10 years**

	2017 Baseline ( $\mu\text{g}/\text{m}^3$ )	2017 with Development ( $\mu\text{g}/\text{m}^3$ )	Change ( $\mu\text{g}/\text{m}^3$ )	Impact
Total Predicted $\text{NO}_2$	28.4	30.1	1.5	slight
Total Predicted $\text{PM}_{10}$	29.5	29.8	0.3	negligible

**Table 3.6: Predicted emissions at Triq ix-Xatt ta' Qui-Si-Sana assuming an average vehicle age of 10 years**

	2017 Baseline ( $\mu\text{g}/\text{m}^3$ )	2017 with Development ( $\mu\text{g}/\text{m}^3$ )	Change ( $\mu\text{g}/\text{m}^3$ )	Impact
Total Predicted $\text{NO}_2$	39.9	43.7	3.4	moderate
Total Predicted $\text{PM}_{10}$	31.4	32.0	0.6	slight



- 3.20. At the Gnien George Bonello du Puis sensitive receptor, the additional vehicles result in a  $1.5\mu\text{g}/\text{m}^3$  increase in  $\text{NO}_2$  emissions and a  $0.3\mu\text{g}/\text{m}^3$  increase in  $\text{PM}_{10}$  emissions. At the pedestrians' sensitive receptor, the Scheme traffic will result in increases of  $3.4\mu\text{g}/\text{m}^3$  in  $\text{NO}_2$  emissions and of  $0.6\mu\text{g}/\text{m}^3$  in  $\text{PM}_{10}$  emissions.

## CONCLUSION

- 3.21. The impact of the Scheme on sensitive receptors at the Gnien George Bonello Du Puis is considered to be negligible for  $\text{PM}_{10}$  and slight for nitrogen dioxide while that on sensitive receptors on ix-Xatt ta' Qui Si Sana is slight for  $\text{PM}_{10}$  to moderate for nitrogen dioxide. It is anticipated that with time the emissions from vehicles will improve including those emissions from HGVs and as the average age of the fleet decreases, then the emissions would decrease further. In this regard it is pertinent to note that while the average age of vehicles (including HGVs) in Malta is 13.8, that of motor vehicles is 12.2. Since the Scheme is largely residential it is anticipated that mostly traffic from motor vehicles will be generated, thus emissions are likely to be lower than those estimated.
- 3.22. In order to further reduce the impact of emissions, it is proposed that the Applicant undertakes a Green Travel Plan that would help to reduce traffic movements in and out of the Scheme for both the commercial and the residential components of the scheme. Typically the Green Travel Plan will take the following stages:
- Stage1- Understanding travel needs of the future tenants of the Scheme;
  - Stage 2 – Establishing measures and targets promoting sustainable travel patterns; and
  - Stage 3 - Monitoring and Implementation by a designated person such as a Travel Plan Coordinator.

**Appendix 4: Addendum to the EPS finalised in 2012**

**PA 01191/05  
SLIEMA TOWNSQUARE  
SLIEMA**

**Environmental Planning Statement - Addendum**

**Version: January 2012**

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## Quality Assurance

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### EPS Addendum

January 2012

**Report for: Sliema Townsquare Limited**

### Revision Schedule

Rev	Date	Details	Prepared by:	Report Checked by:	Approved by:
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**adi**  
**ASSOCIATES**  
ENVIRONMENTAL  
CONSULTANTS

**Kappara Business Centre**  
**113 Triq Birkirkara**  
**San Gwann SGN 4197**

**Tel. / Fax: 21378172 - 77 – 80**  
**Email: [info@adi-associates.com](mailto:info@adi-associates.com)**  
**Web: [www.adi-associates.com](http://www.adi-associates.com)**



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**PA 1191/05: Construct mixed development which includes a) shopping hall, b) commercial areas and residential units c) underground parking and service facilities at Old Union Club, Hugh Hallet Street, Tigne' Street, Sliema**

Comments on the EPS Addendum dated April 2011 – Consultation period held between May 1 to June 1, 2011.

**I. MEPA Comments**

Page	Para	MEPA Comment – June 2011	Adi Reply Dated 6 <sup>th</sup> June 2011	MEPA Responses 15 <sup>th</sup> June 2011	Adi Reply Dated 16 <sup>th</sup> November 2011
General Comments		<p>This report was based on a baseline annual average concentration from one of MEPA's stations. The report includes estimate increases as a result of the scheme using the BREEZE Roads Model which has been calibrated against a set of readings from one passive diffusive tube from Valley Road, Birkirkara. The predictions of the model have not been tested vs in situ measurements from Sliema. There is no mention of how the model was calibrated with respect to PM10 levels.</p> <p>The report does not predict the exceedance of the daily PM10 limit values which tend to be more difficult to predict than annual limit values. Any air quality study is incomplete without an analysis of the effect on the number of days on which the PM10 limit value is exceeded.</p> <p>Consultant should undertake in situ PM10 monitoring at sensitive receptors, approved beforehand by MEPA.</p>	<p>For impacts from road traffic it is almost always the increase in annual average concentrations of NO2 that are of most concern and therefore this is where the focus of the assessment should be. The assumption is made that the factors that give rise to model under-prediction of NOx also apply to PM10 and therefore the same calibration factor is used for PM10 as for NOx. This is common practice in the UK.</p> <p>The number of daily exceedances is presented in Tables 1-3 at the end of this document.</p> <p>The principle of undertaking modelling for this EPS was established in the 2007 EPS. Given the nature of the project and considering that Transport Malta have not yet confirmed the traffic system for the peninsula, readings would not be representative. Furthermore, only modelling can be used to forecast baseline for 2017 and forecast the impact of the Scheme.</p>	<p>We reiterate the statement that the practice of calibrating the model against in-situ measurements from another location is not acceptable. Model predictions are as accurate as the information inputted into them. The data from passive diffusive tubes is already prone to a number of errors (when compared to real time data). This will lead to a summation of errors in the final output. As far as PM10 is concerned the uncertainty in the output is even greater and given that this is the pollutant of concern, MEPA is of the opinion that this should be investigated in greater depth.</p> <p>MEPA also re-iterates that the choice of sensitive receptors should have required MEPA's prior approval.</p>	<p>Adi Associates have undertaken air quality monitoring at Qui Si Sana in line with MEPA's requirements. Prior to undertaking the monitoring Adi Associates prepared a Method Statement (enclosed below in <b>Annex 1</b>) that detailed the methodology including the choice of sensitive receptors. MEPA accepted the Method Statement on 19<sup>th</sup> July 2011. On-site monitoring of NO<sub>2</sub>, PM<sub>10</sub> and traffic was undertaken for six weeks between the 9<sup>th</sup> August and the 20<sup>th</sup> September 2011. The measurements are presented in <b>Annex 2</b> below.</p> <p>The results of the monitoring were used to calibrate the BREEZE ROADS Model that was used to predict the impact of emissions from Scheme traffic on the sensitive receptors as agreed in the Method Statement.</p> <p>The results, presented in Annex 2, clearly show that the impact of the Scheme on both NO<sub>2</sub> and PM10 is negligible, using the significance criteria as defined by MEPA.</p>

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I	I.3	The consultant is to explain why the air quality issue was reopened.	As stated in paragraph I.3 the air quality issue has been reopened following discussions with MEPA on the air quality concerns MEPA has with regards to the Scheme. During this meeting the EPS for Fort Cambridge was discussed where it was noted that the air quality findings for this EPS were accepted by MEPA and the development approved. The developers discussed with MEPA whether it would be appropriate to review such EPS and take on board its findings. MEPA advised that this was possible, however, an update to the Sliema Townsquare EPS would be required. The EIA consultants considered that adoption of the findings of the Fort Cambridge EPS was not appropriate since the air quality parameters described in the EPS (of Fort Cambridge) are not in accordance with current requirements. Given this and noting that the 2007 EPS was based on manual calculations based on the DMRB model, and that since then there has been a significant change in legislation and policy in the field of emissions from vehicles, it was considered appropriate to revisit the entire assessment using state-of-the-art models such as BREEZE ROADS.	Noted.	No further comment.
8	3.2	Which discussions are being referred to? Are these related to the proposal currently being assessed?	Yes.	Noted.	No further comment.

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8	3.4	Mr David Harvey has not been approved by MEPA to undertake the said air quality modelling, as per usual EIA practice.	A signed declaration of Mr David Harvey is provided with this reply. Mr Harvey has been approved by MEPA to carry out air quality assessments on other EIAs. A CV can also be provided if required.	Noted.	No further comment.
8	3.5	The accuracy of the predictions of any model depends on the accuracy of inputs. Models calculating pollutant levels from traffic flows necessitate accurate estimates of traffic flows, which include the type of vehicle (passenger car, HGVs etc.) as well as the legislation class (pre Euro, EI, EII etc.). Accurate topographical information is also required.	This is acknowledged, hence the model was calibrated against measured data including the percentage vehicle distribution (passenger cars vs HGVs), traffic speeds, average vehicles age, and AADT traffic flows.	Does this refer to calibration vs passive diffusive tubes? This is not considered as acceptable. What about PM10?	<p>As per the Method Statement accepted by MEPA on 19<sup>th</sup> July, on-site monitoring of NO2 and PM10 was undertaken for six weeks between the 9<sup>th</sup> August and the 20<sup>th</sup> September 2011.</p> <p>During the same period, an automatic traffic counter was installed that collected data on the volume, speed and classification of passing traffic, as per the approved Method Statement. The findings are presented in <b>Annex 2</b>.</p> <p>The results of the monitoring were used to calibrate the BREEZE ROADS Model that was used to predict the impact of emissions from Scheme traffic on the sensitive receptors as agreed in the Method Statement.</p>
8	3.5	<p>Which part of the LAQM TG(09) was used to calibrate the model?</p> <p>The accuracy and validity of calibrating a model using the results of one passive tube data from another locality lends itself into a number of inaccuracies. Also collocation studies carried out by MEPA have failed to show that the readings of the passive diffusive tubes can be</p>	<p>LAQM TG(09) was not used to calibrate the model. The model calibration followed the LAQM TG(09) guidance and best practice methods used in the UK.</p> <p>The air quality model was calibrated using traffic data and air quality data from the same location, i.e. Triq il-Wied Birkirkara. As with any modelling there will be uncertainties which need to be</p>	This method lends itself to a number of inaccuracies which might grossly miscalculate pollutant levels. As explained earlier on passive diffusive tubes are prone to measurement errors and in some cases they do not even reproduce the trends identified by real time monitors. If one were to consider that there are errors in the measurement, then the inaccuracies	The method for the air quality assessment has been amended as per MEPA's requirements. The methodology is detailed in the Method Statement in <b>Annex I</b> that has been agreed to by MEPA.



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		<p>considered as equivalent to the readings of the standardised methods. Albeit this method used in this assessment was agreed for the EIA for the Smart Shopping Complex proposal, its applicability to the locality of Sliema is questionable.</p> <p>Did the traffic counter apportion the vehicles between the various legislation classes?</p>	<p>taken into account when the significance of the impacts are considered. The model adjustment factor used in the assessment is in line with factors found to be appropriate in the UK.</p> <p>The Consultants cannot understand why MEPA cannot accept the application of the agreed methodology for the EIA for the Smart Shopping Complex in this context.</p> <p>The software that comes with the traffic counter is capable of distributing vehicles across various vehicle classification systems. The percentage HGVs was derived from the counter data.</p>	<p>associated with calibrating the model vs in situ data from a different locality, plus the errors in the model etc, then one will end up with values which have no scientific meaning. MEPA is of the opinion that the situation is critical enough to warrant an in depth analysis of the situation. We have to be absolutely sure that the air quality standards are currently not being exceeded anywhere in the area and will not be exceeded as a result of the scheme.</p> <p>How does the software apportion vehicles by legislation class?</p>	
8/9	3.6/3.7	MEPA prefers the use of HBEFA v 3.1 factors. These are emission factors which are derived from actual vehicle tests.	<p>These factors could have been used but the predicted concentrations would have been the same since the predictions are calibrated against measured data (from Birkirkara).</p> <p>The emission factors used in the model are based on a toolkit published by the UK Department for Environment, Food and Rural Affairs (DEFRA). The toolkit makes use of emission factors published by the UK Department for Transport (also derived from actual vehicle emissions) together with information on fleet composition on different road types. The toolkit is developed by the Highways Agency, AEA, Bureau Veritas and Air Quality Consults, together with</p>	<p>Kindly refer to earlier comments regarding calibration vs passive diffusive tube reading from one sampling site in a different location.</p> <p>The UK factors are not necessarily applicable.</p>	The method for the air quality assessment has been amended as per MEPA's requirements. The methodology is detailed in the Method Statement in <b>Annex I</b> that has been agreed to by MEPA.

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			contributions from CERC.		
9	3.8	Justify why was an urban background site, in this case Zejtun, taken to model the impacts of the scheme.	Emissions from an urban background site are required since BREEZE ROADS only estimates emissions attributed to traffic. These emissions then need to be added to background air quality levels to predict the overall emissions. For this purpose, an urban background site needs to be located at 20 metres or more away from a busy road. MEPA defines the Zejtun station at Gnien San Girgor as an urban background location, and hence NO <sub>2</sub> and PM <sub>10</sub> data from this monitoring station was used.	This is only roughly indicative of the background levels in the area.	The method for the air quality assessment has been amended as per MEPA's requirements. The methodology is detailed in the Method Statement in <b>Annex I</b> that has been agreed to by MEPA.
9	3.9	Using the Zejtun station as the baseline for Sliema is not acceptable. The baseline conditions in Tower Road Sliema may be worse than those at Msida. In addition, it is not possible that the consultants have used the NO <sub>2</sub> data from Zejtun for 2009 in view that this analyser was off all through 2009.	The Zejtun station was not used as a baseline for Sliema. As explained above, emissions data from Zejtun was used for the urban background emissions component of the model. This input needs to exclude emissions from traffic sources, since the contribution of road traffic is predicted using BREEZE ROADS.  NO <sub>2</sub> data from Zejtun was acquired from MEPA. The data is from the passive diffusion tubes.	Noted, this should be clarified in the report as well.  However note that the use of NO <sub>2</sub> passive diffusive tube data is questionable at best.	The method for the air quality assessment has been amended as per MEPA's requirements. The methodology is detailed in the Method Statement in <b>Annex I</b> that has been agreed to by MEPA.
9	3.10	How were AADTs derived from AM peak traffic flows?	There is currently no guidance or standard methodology to convert local peak traffic flows to AADTs. In this absence, the peak hour flows were converted to AADTs based on a 24-hour	This introduces further inaccuracies in the modelled data.	As explained in the Method Statement (Annex I), in the absence of local factors to convert peak hour traffic to AADT, the projected AADT for 2017 will be based on the ratio of the averaged AM peak hour volumes to the averaged total

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			flow profile as used for the EPS.		daily traffic volumes (for Saturdays). Therefore, if over the six-week period, the average AM peak hour traffic comprises say seven per cent of the average daily total, then the AADT for Scenario 1 will translate to:  1616 vehicles ÷ 0.07 = 23,086 vehicles.
9	3.11	There is an application before MEPA for a car park in Qui-Si-Sana (PA 00225/10). It seems that this has not be factored in the scenarios.	No, it was not factored in the scenarios. The scenarios only included traffic from MEPA approved developments. The Qui-si-Sana car park referred to in para 3.11 refers to PA 05845/03 which has been withdrawn. The impact on air quality by traffic generated by PA 00225/10 should not be assessed as part of this application.	Why not?	PA 00225/10 is not an approved development. The air emissions as a result of the proposed car park should be assessed as part of PA 00225/10 application.
9	3.11	Does this paragraph mean that the projected increases as a result of the car park have not been included in the total traffic flows for the development proposed for PA 1191/05?	The flows from the proposed car park PA 00225/10 were not included in the scenarios. As explained in para 3.10, the traffic flows were derived from the 2007 TIS Update for PA 01191/05.	Situation might be somewhat different now.	PA 00225/10 is not an approved development and hence traffic flows generated by the site do not form part of the baseline.
9/10	3.12	According to MEPA's data this estimate is on the low side. The consultants are assuming that the percentage of HGVs passing through this area is identical to the percentage composition of the local fleet. The latter may not be the case. This is a commercial area and a higher percentage of distribution vehicles is expecting in the area. The average speed of 30kph seems rather high.	Given the lack of information on the actual number of HGVs along Triq ix-Xatt ta' Qui-si-Sana, it was felt appropriate to assume the national average. It should be noted that quoted percentage must be related to the 24 hour AADTs and not just peak hour flows.  The average speed considered in the assessment was provided by Transport	This will introduce even more uncertainties in the modelled data.	MEPA's comments have been noted and during the period of monitoring air quality, we have also undertaken traffic counts using an automated counter. The counter differentiates between vehicles and HGVs as explained in the Method Statement (Annex 1). The 6 week traffic count was used to obtain percentage of HGVs.

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			Malta. It is noted that the design speed of the road is 35kph.		
10	3.13	<p>The identified sensitive receptors were not discussed with and approved by MEPA. The location of these points should also be illustrated on a map.</p> <p>How were the receptors identified? Provide justification as to why two sensitive receptors were identified. For example, why was Triq it-Torri not considered as a sensitive receptor? Triq it-Torri should also be identified as a sensitive receptor and included in the study. The air quality conditions at Triq it-Torri may be more critical than that at Triq ix-Xatt ta' Qui-Si-Sana.</p>	<p>The 2007 EPS for PA 01191/05 provided the estimated air quality emissions at the Scheme egress. This can be considered equivalent to pedestrians along Triq ix-Xatt ta' Qui-Si-Sana. An additional receptor was considered (Gnien George Bonello du Puis) since it has since become a focal point for families.</p> <p>Triq it-Torri was not considered as a sensitive receptor since as agreed with MEPA for the 2007 TIS Update, only 25 per cent of Scheme traffic will travel to / from the north. The rest (75 per cent) will travel to / from the south. Hence, the impact from Scheme traffic along Triq ix-Xatt ta' Qui-Si-Sana presents a worst case scenario.</p>	MEPA begs to differ. The Choice of sensitive receptors should have been agreed with MEPA.	The method for the air quality assessment has been amended as per MEPA's requirements. The methodology is detailed in the Method Statement in <b>Annex I</b> that has been agreed to by MEPA.
10	3.13	MEPA has no reservations with annual limit values as a criterion for NO2. MEPA has repeatedly raised the issue that for PM10, the number of exceedances of the daily limit value is to be predicted. The criteria of significance should also be related to the number of additional exceedances of the daily limit value as a result of the operation of the scheme. Exercise should be repeated for this criterion, using the significance criteria for the exceedances of the daily limit value.	<p>LAQM TG(09) guidance suggests the following relationship for the number of exceedances of 50 µg/m3 as 24 hour average PM10:</p> $\text{No 24 hour exceedances per year} = -18.5 + 0.00145 \times (\text{annual average})^3 + (206/\text{annual average}).$ <p>This relationship has been used to estimate the number of days the 24 hour average concentration of PM10 exceeds 50µg/m3.</p>	This is not necessarily applicable across the board. In fact different Member States use different expressions to calculate the number of exceedances of the daily limit value from the annual concentration. MEPA does not consider this expression as relevant.	The method for the air quality assessment has been amended as per MEPA's requirements. The methodology is detailed in the Method Statement in <b>Annex I</b> that has been agreed to by MEPA. Results are presented in <b>Annex 2</b> .



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			The number of exceedances is provided in the following tables.		
10	3.15	The uptake of latest E standards is very slow in Malta, even more so with the current trend which shows an increase in the importation of second hand vehicles from the UK. Therefore, such assumptions may not be realistic.	As the uptake of various initiatives is uncertain, the EPS Update models a number of scenarios, namely where vehicle age is 7 years, and where it is 10 years. The assumptions are based on legal and policy directions provided in Chapter 2.	To note that E-Standards are mandatory for vehicles manufactured from the data of coming into force of the standard onwards, only.  Consumers are not obliged to buy vehicles conforming to the latest E-standard.	The assessment has been undertaken using on site air quality measurements using the methodology detailed in the Method Statement that has been agreed by MEPA in <b>Annex 1</b> . Results are presented in <b>Annex 2</b> .
11	3.16	See comment for para. 3.13 above.	See reply for para 3.13	Noted.	No further comment.
11	3.17	How have these predictions been determined?	The results are based on the expected increase in AADT as a result of the Scheme, i.e. on Scenario 2 (para 3.10).	Noted.	No further comment.
11	3.18	Why is a scenario which is totally contingent upon consumer preferences being incorporated as part of this assessment?	The scenario is not totally contingent upon consumer preferences. The scenario is based on potential improvements to the car fleet as a result of government and EU policy directions vis-à-vis the improvement of air quality in urban areas, as explained in Chapter 2.	This is not correct. E-Standards are mandatory for vehicles manufactured from the data of coming into force of the standard onwards, only.  Consumers are not obliged to buy vehicles conforming to the latest E-standard.  Government can only restrict the passage through a particular area to vehicles conforming to a particular E-standard or better.	The scenarios studied are those presented in the Method Statement in <b>Annex 1</b> .
11	3.18	Once the air quality assessment was being updated, the study did not model the impact of the scheme on the traffic flows in the area. This should have been	The impact of the Scheme on traffic flows in the area was presented in the 2007 TIS Update. Data from the TIS Update was used to provide traffic flows	Yes but once the air quality impact statement was updated, it would have made sense to update the TIS, given that the impact on air quality is due to traffic.	MEPA's comments have been noted and traffic counts over 6 weeks were taken between 9th August and the 20th September 2011. Two scenarios for air

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		an essential component of the study of the impact of the scheme, induced traffic on air quality.	(see paras 3.10 and 3.11).	The situation has changed from 2007 to date.	quality assessment were undertaken using the TIS data of 2007 and using the data of 2011 as a baseline. Both scenarios show negligible impacts from the Scheme as described in Annex 2 below.
11	3.18	Pollution from vehicles depends on a number of factors. It seems that in this case, only the number of vehicles and the average speed of 30kph are being considered. This means that it is being assumed that the traffic flows freely at 30kph, which may not necessarily be the case.	<p>As highlighted in paragraphs 3.6 to 3.8, the predicted emissions were determined from the following:</p> <p>Number of vehicles;</p> <p>Average speed;</p> <p>Percentage HGVs; and</p> <p>Average vehicle age.</p> <p>The average speed along the road was determined following guidance by Transport Malta.</p> <p>It is further noted that this is an accepted model that must make certain assumptions.</p>	Are the consultants saying that the current situation in the area can be modelled assuming free flowing traffic at 30 kph? If yes, then this is hardly realistic.	As agreed in the Method Statement an automated traffic counter was used to measure traffic flows (including speed) along Triq Qui Si Sana for a period of 6 weeks. The data, presented in Annex 2, shows that the average measured speed was 30.6 km/hour in line the guidance given by Transport Malta for the road.
11	3.19	Which figures for PM10 and NO2 levels were used as baseline level?	<p>As highlighted in paragraphs 3.6 to 3.8, the predicted emissions were determined from the following:</p> <p>Number of vehicles;</p> <p>Average speed;</p>	Noted.	No further comment.

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			<p>Percentage HGVs; and</p> <p>Average vehicle age.</p> <p>The average speed along the road was determined following guidance by Transport Malta.</p> <p>It is further noted that this is an accepted model that must make certain assumptions.</p>		
11	3.19	How were the predictions of the model for PM10 levels calibrated?	The assumption is made that the factors that give rise to model under-prediction of NOx also apply to PM10 and therefore the same calibration factor is used for PM10 as for NOx. This is common practice in the UK.	Not applicable to Malta.	Refer to Method Statement.
12	3.20	What are the predicted cumulative impacts?	Cumulative impacts are provided in tables 3.3 to 3.6.	This is not clearly spelt out in the document.	Please refer to <b>Annex 2</b> for results of modelling.
12	3.22	The framework presented for the Green Travel Plan is rather vague.	What further details are required by MEPA? The Green Travel Plan would be an eventual permit condition; at this stage only a framework was provided.	Further details are required.	As shown in <b>Annex 2</b> the impacts of the Scheme on air quality are negligible. The impact is therefore judged to be not significant, thus a Green Travel Plan is not required.

## **ANNEX I: AIR QUALITY METHOD STATEMENT**



## PA 01191/05

**Sliema Townsquare: Construct mixed development which includes a) shopping hall, b) Commercial areas and residential units, c) Underground parking and service facilities, Sliema**

## AIR QUALITY METHOD STATEMENT

### Introduction

1. This method statement provides information on the air quality input into the Environmental Planning Statement Update related to the development of Sliema Townsquare in Sliema. The Project is hereinafter referred to as “the Scheme”. The Scheme is intended to provide retail floorspace, residential units, open space and related car parking.
2. MEPA’s ToR are provided in **Appendix A** to this Method Statement. The scope of the study is:

*To establish baseline levels for the pollutants outlined in point 3 above (PM<sub>10</sub> and NO<sub>2</sub>), and to use this data and the traffic counter data in order to calibrate the outputs of the Breeze model, which will then be used to project pollutant levels of PM<sub>10</sub> and NO<sub>2</sub> to 2017.*
3. MEPA’s ToR includes the location for the monitoring and the design criteria for the air quality samplers.
4. This note has been prepared to describe to MEPA the methodology that will be used to assess impacts.
5. It is understood that upon acceptance of this Method Statement by MEPA and provision of the assessment as described in this Method Statement, MEPA will not require additional information or studies in respect of the air quality impacts of the Scheme.

### Competence of air quality assessor

6. Mr David Harvey of ADM Ltd (UK) will undertake the air quality assessment; air quality data will be collected by Ecoserv Ltd. Adi Associates will assist Mr Harvey with traffic data and the impact assessment.

## Proposed Methodology

7. This Method Statement outlines how the air quality impacts of development traffic will be assessed.

### Dispersion modelling

8. The dispersion of emissions to air from vehicles in urban areas is extremely complex for the following reasons:
- Uncertainty in the number of vehicles and the percentage in each vehicle class;
  - Uncertainty and variability in vehicle emissions data;
  - Variability in vehicle speeds;
  - Complexity of dispersion which is influenced by meteorological conditions, vehicle movement and topography; and
  - Uncertainty in the prevailing un-modelled background pollutant concentrations.
9. Given the complexity of wind flows at ground level in urban areas, even modelling techniques such as computational fluid dynamics or physical modelling in a wind tunnel are unable to provide reliable estimates of the vehicular contribution to pollutant concentrations.
10. Over a number of years, techniques to overcome these uncertainties have been developed. The proposed methodology for assessing the impacts on air quality occurring due to emissions from vehicles is drawn from experience and UK Government guidance (Defra 2009).
11. UK guidance and practice is that predictions from road traffic dispersion models should be calibrated against measured data to ensure that the resulting total concentration (road traffic plus background) matches the measured concentration at a location that is similar to where predictions are to be made (Defra 2009).

### BREEZE ROADS

12. For this assessment the BREEZE ROADS dispersion model will be used. BREEZE ROADS, which can be described as an 'advanced model' (DETR 2000), was developed in the US and is extensively used in the UK and other countries. It is an air dispersion modeling suite that predicts air quality impacts of a number of pollutants including carbon monoxide (CO), NO<sub>2</sub> and PM. It is specifically designed to model pollutant concentrations that are emitted from moving and idling motor vehicles at or alongside roadways and roadway intersections.
13. As described above, UK guidance and practice is to calibrate the model to local conditions. Therefore, in order to accurately model traffic emissions, the BREEZE Roads model will be calibrated according to best practice and to UK guidance document *Local Air Quality Management – Technical Guidance LAQM.TG(09)* published by the UK Department for Environment, Food and Rural Affairs (DEFRA)<sup>1</sup>. The model will be calibrated with traffic and air emissions data collected from Triq Qui-si-Sana during six weeks of consecutive monitoring. Provided that the model calibration

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<sup>1</sup> Department for Environment, Food and Rural Affairs

factor used is appropriate for the location of the development, and for future years, this method will provide reliable estimates of the impacts on air quality from the Scheme and reduce uncertainties.

### **Model calibration**

14. The BREEZE ROADS model will be calibrated against data collected from Triq Qui-si-Sana during a six-week monitoring period. This data will consist of:
- Six weeks of NO<sub>2</sub> and PM<sub>10</sub> measured roadside concentrations; and
  - Simultaneous six weeks of continuous traffic counts

### **Current traffic emissions**

15. Prior to predicting the air impacts associated with operational traffic from the Scheme, the present air quality situation along Triq ix-Xatt ta' Qui-si-Sana will be measured. Real-time measurements will be made using an automated gas analyser that can continuously analyse for NO and NO<sub>2</sub> gases. An air quality station will be set up by Ecoserv Ltd on top of the security room along the road (see **Figure I**) to measure the levels of NO<sub>2</sub> and PM<sub>10</sub>. This location has been agreed with MEPA and is also identified in the ToR, see **Appendix A**. The duration of the monitoring will be of 6 weeks (42 days), during which continuous (24 hours) data will be collected.
16. The methodology applied for NO<sub>x</sub> measurements is by chemiluminescence according to the EN standard (EN 14211:2005) that is stated in the EU Directive on Air Quality (2008/50/EC), and is the reference method stated in the EU Directive on Air Quality. Measurements can be made at specific time intervals (e.g. 15 minutes) to obtain data on NO<sub>x</sub> levels. During the monitoring period, the data collected will be periodically reviewed to ascertain the proper operation of the equipment deployed on site.

**Figure 1: Location for air quality and traffic monitoring**



17. Monitoring for  $PM_{10}$  levels will be carried out using an automated low-volume sampler that draws in ambient air through filters at an average flow rate of 3.0 L/min. Based on the requirements of air quality legislation and to enable adequate comparison of results, separate filters will be exposed to ambient air for 24 hours so as to provide results in daily values.
18. The gravimetric analysis of the filters will follow the reference method for the sampling and measurement of  $PM_{10}$  (EN 12341: 1999) that is indicated in Annex VI Section A.4 of the Air Quality Directive. The filters will be analysed gravimetrically for  $PM_{10}$  at a lab that is accredited according to the ISO 17025 standard. Filters will be conditioned in a conditioned room as stipulated by the standard method. The weighing of the filters will be undertaken through a microbalance having a resolution of 0.01mg.
19. The collected data will cover six weeks; however for calibration purposes, the data needs to represent annual averages. MEPA has agreed that it will provide factors to convert the monitoring data from a six-week average to an annual average, see **Appendix A**. It will be assumed that the factor provided by MEPA will correct the six week average concentration to be equivalent to either an annual average for 2009 or 2010, the year to be assumed will depend on the availability of background data.
20. The percentage of the predicted concentration of  $NO_x$  that is in the form of  $NO_2$  will be estimated using UK guidance which takes account of the prevailing background pollutant concentrations (LAQM 2010b).
21. It is also noted that for a typical mix of vehicles, the mass emission rate of the  $NO_x$  is about 10 times that of  $PM_{10}$  and therefore  $NO_2$  is most likely to be the pollutant which gives rise to the most significant impact.



### ***Traffic data***

22. During the six weeks of air quality monitoring, an automatic traffic counter will be installed at the same location to measure traffic flows. This will allow for the correlation of traffic data with emissions data. The traffic counter, consisting of two hollow rubber tubes connected to a data recorder, will provide traffic volumes, travel speeds and vehicle types.
23. Throughout the monitoring period, the traffic counter will be regularly checked. Data will be downloaded and reviewed to ascertain proper operation of equipment.
24. The collected data will be used to estimate the following parameters for Triq Qui-si-Sana that are required for calibration purposes:
  - Annual Average Daily Traffic (AADT);
  - Average speed; and
  - Percentage HGVs<sup>2</sup>.
25. The automatic traffic counter comes with software (MCReport) that can calculate the AADT and the mean speed. With regards to the percentage HGVs, the ARX classification system (see **Appendix 2**) will be used to define the vehicle split. Vehicles that fall in classes 4 to 12 will be considered HGVs.

### **Predictions**

26. The following section details the inputs and assumptions that will be made for predicting emissions from operational traffic. Final predictions will be presented for the total (i.e. road + background) annual average concentrations of NO<sub>2</sub> and PM<sub>10</sub> for each receptor for each scenario.

### ***Traffic scenarios and assumptions***

27. The AADT flows along Triq ix-Xatt ta' Qui-Si-Sana will be derived from weekend AM peak hour flows extracted from the TIS Update<sup>3</sup>. In terms of traffic volumes, the weekend AM peak hour flows present the worst-case. Two scenarios were developed for the Scheme:
  - Scenario 1 (2017 without development): 1616 vehicles; and
  - Scenario 2 (2017 with development): 1909 vehicles.
28. Both scenarios comprise 2017 base network traffic, together with traffic generated by the Fort Cambridge and MIDI developments. It is noted that while traffic data for the Scheme, Fort Cambridge and MIDI have been retained as per the 2007 EPS and TIS, Qui-Si-Sana Car Park data has been excluded because this development has been abandoned.

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<sup>2</sup> Heavy Goods Vehicles > 3.5 tonnes

<sup>3</sup> Adi Associates Environmental Consultants Ltd, David V. Camilleri 2007. Sliema Townsquare. Update to the Traffic Impact Statement prepared in support of development permit application No. PA 01191/05. San Gwann, September 2007; 27pp.

29. For all scenarios, the AADTs, the percentage HGVs and the daily average speed along Triq ix-Xatt ta' Qui-si-Sana will be calculated from the data collected by the automatic traffic counter. In order to match the worst case scenario, only data collected on Saturdays will be used.
30. In the absence of local factors to convert peak hour traffic to AADT, the projected AADT for 2017 will be based on the ratio of the averaged AM peak hour volumes to the averaged total daily traffic volumes (for Saturdays). Therefore, if over the six-week period, the average AM peak hour traffic comprises say seven per cent of the average daily total, then the AADT for Scenario I will translate to:
- $$1616 \text{ vehicles} \div 0.07 = 23,086 \text{ vehicles.}$$
31. Similarly, the average daily speed will be extracted from data collected on six Saturdays. With regards to the percentage HGVs, the ARX classification system (see **Appendix B**) will be used to define the vehicle split. Vehicles that on Saturdays fall in bins 4 to 12 will be considered HGVs.

#### ***Sensitive receptors***

- 3.13. Predictions will be made at two sensitive receptors, see **Figure 2**. These are pedestrians along Triq ix-Xatt ta' Qui-Si-Sana and users of Glien George Bonello du Puis. At each receptor and for both scenarios, the emission values of NO<sub>2</sub> and PM<sub>10</sub> will be modelled. The likely number of daily exceedances of the 90.4 percentile criterion for PM<sub>10</sub> will be calculated using equations to be provided by MEPA (see **Appendix A**).

**Location of sensitive receptors**

Sliema Town Square  
EPS Update

**KEY**

- Site boundary
- Sensitive receptors

0 35 70 140  
Metres

INDICATIVE ONLY  
Not to be used for direct interpretation

Mapped by  
Adi Associates  
Environmental Consultants Ltd

July 2011

Ref: EIA/STS/Maps/

Digitised by  
adi  
ASSOCIATES  
ENVIRONMENTAL  
CONSULTANTS

### ***Emissions factors***

32. Emission factors are required to predict emissions from future vehicle fleet compositions. It will be assumed that vehicle emissions rates will be similar to those in the UK and hence the same emissions factors will be used (LAQM 2010a). These factors will be based on a toolkit published by DEFRA<sup>4</sup> that mirror the past and present vehicle fleet in the UK. The factors will however, be adjusted in line with the age distribution of Maltese fleet.
33. The UK average vehicle age is seven years, compared to Malta's 13.8 years<sup>5</sup> as at the end of 2010. This implies that currently, the Maltese emission factors are seven years behind those of the UK. Therefore the emission factors of the current fleet (2010) are equivalent to the UK emission factors of 2003. It is, however, noted that the current (as at end November 2010) average age for motor vehicles (i.e. cars only) is 12.2<sup>6</sup>.
34. Nonetheless, the average vehicle age is expected to be improved. At a European level, this is due to the introduction of better engine standards (Euro V and Euro VI), the Green Vehicles Strategy<sup>7</sup>, the Transport White Paper and the Revision of the European Union Air Quality Policy. At a local level, apart from legislative requirements such as Legal Notice 216 of 2001<sup>8</sup> and Legal Notice 224 of 2001 (as amended by LN 231 of 2004)<sup>9</sup>, there are other air quality related policies such as the Vehicle Registration Tax and Circulation Tax, Vehicle Scrapping Scheme and the MEPA Air Quality Plan for the Maltese Islands. Therefore, it is reasonably justified to present the predicted emissions for 2017 for two different vehicle ages:
- An average vehicle age of 7 years; and
  - An average vehicle age of 10 years.

### ***Background air quality***

35. Emissions from an urban background site are required since BREEZE ROADS only estimates emissions attributed to traffic. These traffic emissions then need to be added to background air quality levels to predict the overall level of emissions. For this purpose, an urban background site needs to be located at 20 metres or more away from a busy road so that there is no influence from traffic.

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<sup>4</sup> The toolkit makes use of emission factors published by the UK Department for Transport (derived from actual vehicle emissions) together with information on fleet composition on different road types. The toolkit is developed by the Highways Agency, AEA, Bureau Veritas and Air Quality Consultants, together with contributions from CERC.

<sup>5</sup> NSO, Email Communication, 9 March 2011.

<sup>6</sup> Transport Malta, E-mail Communication, April 2011

<sup>7</sup> COM(2010)186 final

<sup>8</sup> Ambient Air Quality Assessment and Management Regulations

<sup>9</sup> Limit values for Sulphur Dioxide, Nitrogen Dioxide and Oxides of Nitrogen, Particulate Matter and Lead in Ambient Air Regulations



36. MEPA defines the Zejtun air quality monitoring station at Gnien San Girgor as an urban background location. Hence, 2009 NO<sub>2</sub> and PM<sub>10</sub> data from this monitoring station will be used for the scenario years, unless MEPA can provide the consultants with 2010 data in which case we would use 2010 data. In this respect, a conservative approach will be taken since the model will assume that the background concentrations remain the same in the scenario years.

***Meteorological data***

37. Meteorological data is required to model the dispersion of pollutants. This data will be requested from the Meteorological Office in Luqa. 2009 data will be used if background data from Zejtun is 2009, whereas if 2010 data is used then meteorological data of 2010 will be used.

**Impact Assessment**

38. In assessing the significance of the operational traffic related impacts of the Scheme on air quality, the criteria set in **Appendix A** will be used.
39. Using the methodology described in this Method Statement, a predicted annual average increase in concentrations of both NO<sub>2</sub> and PM<sub>10</sub> at the specific receptors of less 4 µg/m<sup>3</sup> occurring as a consequence of the Scheme is acceptable to MEPA.

**Mitigation and Residual Impacts**

40. The scope for mitigation of air quality impacts and residual impacts will be addressed in the EPS Addendum.

Mr David Harvey

Adi Associates Environmental Consultants Ltd

July 2011

## **References**

Defra (2009) Local Air Quality Management, Technical Guidance LAQM TG (09).

DETR (2000) Review and Assessment: Selection and use of Dispersion Models TG4 (00).

EPUK (2010) Development Control Planning for Air Quality (2010 Update), EPUK, formerly NSCA. April 2010.

LAQM (2010b) EFT\_Version\_4.1.xls, a www document available at <http://laqm.l.defra.gov.uk/review/tools/monitoring/calculator.php>

LAQM (2010a) no2tonox8\_ja\_b.xls, a www document available at <http://laqm.l.defra.gov.uk/review/tools/monitoring/calculator.php>

## **Appendix A**

### Terms of reference for the conduction of an air quality study (PA 01191/05)

1. *Location:* Triq ix-Xatt ta' Qui Si Sana.
2. *Sampling location:* on top of the security room at ~ N35° 54.615' and E14° 30.573' (WGS 84 datum). Alternative locations are to be agreed to by both MEPA and the consultant/s.
3. *Pollutants to be monitored:* PM10 and NO<sub>2</sub>.
4. *Scope:* to establish baseline levels for the pollutants outlined in point 3 above, and to use this data and the traffic counter data in order to calibrate the outputs of the Breeze model, which will then be used to project pollutant levels of PM10 and NO<sub>2</sub> to 2017.

### Measurement of PM10

1. PM10 shall be preferably sampled and measured using a gravimetric sampler as per MSA EN 12341:2000.
2. The Design criteria for the sampler shall be as follows:

Type of Sampler	Flow rate		Filters
Low volume sampler (LVS-PM10 reference head).	2.3 m <sup>3</sup> .hr <sup>-1</sup> or 38.3dm <sup>3</sup> .min <sup>-1</sup> .	Operated at a constant rate of 2.3 m <sup>3</sup> .hr <sup>-1</sup> ± 2%.	Circular: Ø = 47 mm and Ø = 50 mm
High volume sampler (HVS-PM10 reference head).	68 m <sup>3</sup> .hr <sup>-1</sup> or 1.133 m <sup>3</sup> .min <sup>-1</sup> .	Operated at a constant rate of 68 m <sup>3</sup> .hr <sup>-1</sup> ± 2%.	Rectangular 203 mm × 254 mm

3. The resolution of the balance used for the weighing of filters sampled using an LVS shall be at least 10 microgramme.
4. The filters should be conditioned for at least 48hours at 50% relative humidity (+ or - 5%) and at 20 degrees celcius (+ or - 1 K). The filters should be weighed at least twice for concordance with a time lag of at least 12 hours between the two weighings. Note that flow rates are at ambient volumes not at normalised volumes. The weighing shall take place in the same climate controlled room.
5. MEPA will consider alternative methods (e.g. light scattering instruments) as long as they are proven to be equivalent to the gravimetric method. In case alternative methods are used, the consultants are to forward certificates of equivalence and the respective conversion factor.

### Measurement of NO<sub>2</sub>

NO<sub>2</sub> shall be measured continuously using MSA EN 14211:2005.

### Duration of the sampling

At least 6 weeks.



### Data to be forwarded by MEPA

1. MEPA will forward a scale up factor (in order to convert the 6 weekly average concentrations of PM<sub>10</sub> and NO<sub>2</sub> into yearly averages), once the dates of the sampling are communicated to it.
2. MEPA will forward an equation for calculation of the likely number of exceedances of the 90,4 percentile criterion for PM<sub>10</sub>.

### Additional

For NO<sub>2</sub> the consultants are to assume that as long as the yearly average concentrations are below 40µg/m<sup>3</sup> then the 95 percentile criterion is being met.

### Criteria of significance:

Days of exceedance of the 50µg/m <sup>3</sup> limit for PM <sub>10</sub> , without scheme.	Increase in Number of days exceeding daily PM <sub>10</sub> limit due to scheme.		
	≥ 1 days but < 2 days	≥ 2 days but < 4 days	≥ 4 days
>35 exceedances per year in the zone.	Slight Adverse	Moderate Adverse	Substantial Adverse
≥ 32 exceedances per year but < 35 exceedances per year.	Slight Adverse	Moderate Adverse	Moderate Adverse
≥ 26 exceedances per year but < 32 exceedances per year.	Negligible	Slight Adverse	Slight Adverse
< 26 exceedances per year.	Negligible	Negligible	Slight Adverse

Number of times the 200 µg/m <sup>3</sup> limit for NO <sub>2</sub> was exceeded, without scheme. [In one calendar year]	Increase in Number of exceedances of the hourly NO <sub>2</sub> limit value due to scheme.		
	1	>1 but < 2	≥ 2
>18 exceedances per year in the zone.	Slight Adverse	Moderate Adverse	Substantial Adverse
≥ 16 exceedances per year but < 18 exceedances per year.	Slight Adverse	Moderate Adverse	Moderate Adverse
≥ 13 exceedances per year but < 16 exceedances per year.	Negligible	Slight Adverse	Slight Adverse

< 13 exceedances per year.	Negligible	Negligible	Slight Adverse
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Baseline annual Concentration of NO <sub>2</sub> /PM <sub>10</sub> .	Change in Concentration of NO <sub>2</sub> /PM <sub>10</sub> due to scheme.		
	≥0.4 µg/m <sup>3</sup> but < 2 µg/m <sup>3</sup>	≥2 µg/m <sup>3</sup> but < 4 µg/m <sup>3</sup>	≥4 µg/m <sup>3</sup>
Above limit value: > 40 µg/m <sup>3</sup> .	Slight Adverse	Moderate Adverse	Substantial Adverse
Just below limit value: ≥ 36µg/m <sup>3</sup> but < 40 µg/m <sup>3</sup> .	Slight Adverse	Moderate Adverse	Moderate Adverse
Below limit value: ≥ 30 µg/m <sup>3</sup> but < 36 µg/m <sup>3</sup> .	Negligible	Slight Adverse	Slight Adverse
Well below limit value: < 30 µg/m <sup>3</sup> .	Negligible	Negligible	Slight Adverse

## **Appendix B**

## ARX

ARX is a modification of AustRoads94. It removes class 12, moves all other classes up by one, and inserts a cycle class as class 1.

- **Units:** Metric (m)
- **Car class:** 2
- **Unclassifiable vehicle class:** 13

Axles	Groups	Description	Class		Parameters	Dominant Vehicle	Aggregate
2	1 or 2	Very Short - Bicycle or Motorcycle	MC	1	$d(1) < 1.7\text{m}$ & axles=2		1 (Light)
2	1 or 2	Short - Sedan, Wagon, 4WD, Utility, Light Van	SV	2	$d(1) \geq 1.7\text{m}$ , $d(1) \leq 3.2\text{m}$ & axles=2		
3, 4 or 5	3	Short Towing - Trailer, Caravan, Boat, etc.	SVT	3	groups=3, $d(1) \geq 2.1\text{m}$ , $d(1) \leq 3.2\text{m}$ , $d(2) \geq 2.1\text{m}$ & axles=3,4,5		
2	2	Two axle truck or Bus	TB2	4	$d(1) > 3.2\text{m}$ & axles=2		2 (Medium)
3	2	Three axle truck or Bus	TB3	5	axles=3 & groups=2		
>3	2	Four axle truck	T4	6	axles>3 & groups=2		
3	3	Three axle articulated vehicle or Rigid vehicle and trailer	ART3	7	$d(1) > 3.2\text{m}$ , axles=3 & groups=3		3 (Heavy)
4	>2	Four axle articulated vehicle or Rigid vehicle and trailer	ART4	8	$d(2) < 2.1\text{m}$ or $d(1) < 2.1\text{m}$ or $d(1) > 3.2\text{m}$ & axles = 4 & groups>2		
5	>2	Five axle articulated vehicle or Rigid vehicle and trailer	ART5	9	$d(2) < 2.1\text{m}$ or $d(1) < 2.1\text{m}$ or $d(1) > 3.2\text{m}$ & axles=5 & groups>2		
>=6	>2	Six (or more) axle articulated vehicle or Rigid vehicle and trailer	ART6	10	axles=6 & groups>2 or axles>6 & groups=3		
>6	4	B-Double or Heavy truck and trailer	BD	11	groups=4 & axles>6		
>6	>=5	Double or triple road train or Heavy truck and two (or more) trailers	DRT	12	groups>=5 & axles>6		



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## **ANNEX 2: IN SITU MONITORING & MODELLING RESULTS**

## IN SITU AIR QUALITY MONITORING RESULTS

### AIR QUALITY MONITORING

41. In situ monitoring of NO<sub>2</sub> and PM<sub>10</sub> emissions, and traffic, was undertaken between the 9<sup>th</sup> August and the 20<sup>th</sup> September 2011 at a location agreed by MEPA. The results of the monitoring over the six week period yield a daily average of:
- NO<sub>2</sub>: 29.8µg/m<sup>3</sup>; and
  - PM<sub>10</sub>: 42.9µg/m<sup>3</sup>.
42. As per the agreed Method Statement, MEPA provided factors<sup>10</sup> to convert these 6-weeks results to annual averages. Using these factors, the following annual averages were calculated:
- NO<sub>2</sub>: 31.9µg/m<sup>3</sup>; and
  - PM<sub>10</sub>: 45.5µg/m<sup>3</sup>.
43. In terms of days of PM<sub>10</sub> exceedances, during the monitoring period there were 10 days where the level of PM<sub>10</sub> exceeded 50µg/m<sup>3</sup>.
44. In order to calculate the number of annual PM<sub>10</sub> exceedances, the formula provided by MEPA was used. Using the PM<sub>10</sub> annual average of 45.5µg/m<sup>3</sup>, the number of daily PM<sub>10</sub> exceedances along Triq Qui-Si-Sana was calculated as 55.7 days.

### Traffic

45. An Automatic Traffic Counter (ATC) was installed along Triq Qui-Si-Sana for the same six-week period. During time, an AADT equivalent to 10,134 vehicles was recorded, the average speed was 30.6km/hr, and the percentage HGV was 7.81%.
46. In order to extrapolate peak hour traffic to AADT, a factor was calculated based on the peak hour flows and the average daily flows on Saturdays, as per the Method Statement. This calculated factor was equivalent to 0.0691.
47. The AADT is much lower than the predicted values in the TIS. For this reason, predicted emissions from the Scheme were also based on the traffic observations of 2011, and presented as a separate scenario.

### SIGNIFICANCE CRITERIA

48. The significance criteria used in the assessment are those provided by MEPA as stated in the Method Statement in Annex I above. These are reproduced hereunder:

<sup>10</sup> NO<sub>2</sub> was factored up by 1.07 and PM<sub>10</sub> emissions were factored by 1.06 for an annual average of 45.5 µg/m<sup>3</sup>

**Table 1: Days of PM<sub>10</sub> exceedances**

Days of exceedance of the 50µg/m <sup>3</sup> limit for PM <sub>10</sub> , without scheme.	Increase in Number of days exceeding daily PM <sub>10</sub> limit due to scheme.		
	≥ 1 days but < 2 days	≥ 2 days but < 4 days	≥ 4 days
>35 exceedances per year in the zone.	Slight Adverse	Moderate Adverse	Substantial Adverse
≥ 32 exceedances per year but < 35 exceedances per year.	Slight Adverse	Moderate Adverse	Moderate Adverse
≥ 26 exceedances per year but < 32 exceedances per year.	Negligible	Slight Adverse	Slight Adverse
< 26 exceedances per year.	Negligible	Negligible	Slight Adverse

**Table 2: Days of NO<sub>2</sub> exceedances**

Number of times the 200 µg/m <sup>3</sup> limit for NO <sub>2</sub> was exceeded, without scheme. [In one calendar year]	Increase in Number of exceedances of the hourly NO <sub>2</sub> limit value due to scheme.		
	1	>1 but < 2	≥ 2
>18 exceedances per year in the zone.	Slight Adverse	Moderate Adverse	Substantial Adverse
≥ 16 exceedances per year but < 18 exceedances per year.	Slight Adverse	Moderate Adverse	Moderate Adverse
≥ 13 exceedances per year but < 16 exceedances per year.	Negligible	Slight Adverse	Slight Adverse
< 13 exceedances per year.	Negligible	Negligible	Slight Adverse

**Table 3: NO<sub>2</sub> and PM<sub>10</sub> Annual limit values**

Baseline annual concentration of NO <sub>2</sub> / PM <sub>10</sub> .	Change in Concentration of NO <sub>2</sub> / PM <sub>10</sub> due to scheme.		
	≥0.4 µg/m <sup>3</sup> but < 2 µg/m <sup>3</sup>	≥2 µg/m <sup>3</sup> but < 4 µg/m <sup>3</sup>	≥4 µg/m <sup>3</sup>
Above limit value: > 40 µg/m <sup>3</sup> .	Slight Adverse	Moderate Adverse	Substantial Adverse
Just below limit value: ≥ 36µg/m <sup>3</sup> but < 40 µg/m <sup>3</sup> .	Slight Adverse	Moderate Adverse	Moderate Adverse
Below limit value: ≥ 30 µg/m <sup>3</sup> but < 36 µg/m <sup>3</sup> .	Negligible	Slight Adverse	Slight Adverse
Well below limit value: < 30 µg/m <sup>3</sup> .	Negligible	Negligible	Slight Adverse

## RESULTS

49. The following tables show the predicted emissions in 2017 at the sensitive receptors agreed by MEPA, for the traffic volumes estimated in the TIS. These emissions were calibrated against measured data from Triq Qui-Si-Sana. Using the factor of 0.0691, the AADT with and without the Scheme was calculated as follows:
- Without development: 23,386; and
  - With development: 27,627.
50. The table numbers are equivalent to those in the EPS Update. The results show separately, the emissions for an average vehicle age of seven and ten years, as agreed with MEPA in the Method Statement (Annex I).
51. The baseline levels are derived from data collected on site. It is noted that both predicted emission levels and the change have been rounded to one decimal place. This can lead to minor discrepancies between the result shown in the *Change* column and the difference between the baseline and the baseline with development.

**Table 3.3(a): Predicted emissions at the public garden assuming an average vehicle age of 7 years**

	2017 Baseline	2017 with Development	Change	Impact
Total Predicted NO <sub>2</sub> (µg/m <sup>3</sup> )	16.0	16.6	0.5	Negligible
Total Predicted PM <sub>10</sub> (µg/m <sup>3</sup> )	44.4	44.6	0.1	Negligible
Days of PM <sub>10</sub> > 50 µg/m <sup>3</sup> (days)	53.1	53.4	0.3	Negligible

**Table 3.4(a): Predicted emissions at Triq ix-Xatt ta' Qui-Si-Sana assuming an average vehicle age of 7 years**

	2017 Baseline	2017 with Development	Change	Impact
Total Predicted NO <sub>2</sub> (µg/m <sup>3</sup> )	18.7	19.7	1.0	Negligible
Total Predicted PM <sub>10</sub> (µg/m <sup>3</sup> )	45.0	45.2	0.2	Negligible
Days of PM <sub>10</sub> > 50 µg/m <sup>3</sup> (days)	54.5	55.0	0.5	Negligible

**Table 3.5(a): Predicted emissions at public garden assuming an average vehicle age of 10 years**

	2017 Baseline	2017 with Development	Change	Impact
Total Predicted NO <sub>2</sub> (µg/m <sup>3</sup> )	17.5	18.3	0.8	Negligible
Total Predicted PM <sub>10</sub> (µg/m <sup>3</sup> )	44.5	44.6	0.1	Negligible
Days of PM <sub>10</sub> > 50 µg/m <sup>3</sup> (days)	53.3	53.6	0.3	Negligible



**Table 3.6(a): Predicted emissions at Triq ix-Xatt ta' Qui-Si-Sana assuming an average vehicle age of 10 years**

	2017 Baseline	2017 with Development	Change	Impact
<b>Total Predicted NO<sub>2</sub> (µg/m<sup>3</sup>)</b>	21.5	23.0	1.5	<b>Negligible</b>
<b>Total Predicted PM<sub>10</sub> (µg/m<sup>3</sup>)</b>	45.1	45.4	0.2	<b>Negligible</b>
<b>Days of PM<sub>10</sub> &gt; 50 µg/m<sup>3</sup> (days)</b>	54.9	55.4	0.6	<b>Negligible</b>

52. The TIS (undertaken in 2007) forecast the traffic in 2012 with and without the Scheme and used the 2012 forecast to estimate the traffic flows in 2017. The surveys undertaken for this study show that the traffic flows forecast for 2012 will not materialise and thus the forecasts for 2017 are also likely to be over-estimated. The 2007 TIS estimates for 2012 and 2017 (using the factor of 0.0691) are 21,527 and 23,386 without the Scheme; the actual 2011 flows are 10,134 and based on these flows the traffic flows in 2017 without the Scheme are 15,471. The traffic generated by the Scheme in 2017 as estimated in the TIS is 4,240 vehicles; this doesn't change. The 2017 emissions that would result from the revised (lower) traffic baseline are presented below.

**Table 3.3(b): Predicted emissions at the public garden assuming an average vehicle age of 7 years**

	2017 Baseline	2017 with Development	Change	Impact
<b>Total Predicted NO<sub>2</sub> (µg/m<sup>3</sup>)</b>	15.0	15.6	0.5	<b>Negligible</b>
<b>Total Predicted PM<sub>10</sub> (µg/m<sup>3</sup>)</b>	44.2	44.3	0.1	<b>Negligible</b>
<b>Days of PM<sub>10</sub> &gt; 50 µg/m<sup>3</sup> (days)</b>	52.6	52.9	0.3	<b>Negligible</b>

**Table 3.4(b): Predicted emissions at Triq ix-Xatt ta' Qui-Si-Sana assuming an average vehicle age of 7 years**

	2017 Baseline	2017 with Development	Change	Impact
<b>Total Predicted NO<sub>2</sub> (µg/m<sup>3</sup>)</b>	16.8	17.8	1.0	<b>Negligible</b>
<b>Total Predicted PM<sub>10</sub> (µg/m<sup>3</sup>)</b>	44.6	44.8	0.2	<b>Negligible</b>
<b>Days of PM<sub>10</sub> &gt; 50 µg/m<sup>3</sup> (days)</b>	53.5	54.0	0.5	<b>Negligible</b>

**Table 3.5(b): Predicted emissions at public garden assuming an average vehicle age of 10 years**

	2017 Baseline	2017 with Development	Change	Impact
<b>Total Predicted NO<sub>2</sub> (µg/m<sup>3</sup>)</b>	16.0	16.8	0.8	<b>Negligible</b>
<b>Total Predicted PM<sub>10</sub> (µg/m<sup>3</sup>)</b>	44.3	44.4	0.1	<b>Negligible</b>
<b>Days of PM<sub>10</sub> &gt; 50 µg/m<sup>3</sup> (days)</b>	52.7	53.0	0.3	<b>Negligible</b>

**Table 3.6(b): Predicted emissions at Triq ix-Xatt ta' Qui-Si-Sana assuming an average vehicle age of 10 years**

	2017 Baseline	2017 with Development	Change	Impact
<b>Total Predicted NO<sub>2</sub> (µg/m<sup>3</sup>)</b>	18.7	20.2	1.5	<b>Negligible</b>
<b>Total Predicted PM<sub>10</sub> (µg/m<sup>3</sup>)</b>	44.7	44.9	0.2	<b>Negligible</b>
<b>Days of PM<sub>10</sub> &gt; 50 µg/m<sup>3</sup> (days)</b>	53.7	54.3	0.6	<b>Negligible</b>

53. The results of all scenarios show that the impact from Scheme traffic on NO<sub>2</sub> and PM<sub>10</sub> emissions, using the significance criteria provided by MEPA, is negligible.

## CUMULATIVE IMPACTS

54. Tables 3.3-3.6 above show the cumulative impacts – these are given in the column labelled “2017 with development”.
55. Although the PM<sub>10</sub> limit values as set in LN478/2010 are exceeded, the PM<sub>10</sub> annual average (45.5µg/m<sup>3</sup>) falls within the margins of tolerance as set in Schedule 7 (48µg/m<sup>3</sup>) of the Legal Notice. Moreover, given that the AADT along Triq Qui-Si-Sana was just 10,134 vehicles, the high level of PM<sub>10</sub> cannot be solely attributed to traffic. This is also acknowledged in other EIAs carried out for developments in the area (for example the EIA for Fort Cambridge) where high recorded baseline PM10 levels were attributed to non-traffic sources.
56. MEPA's State of the Environment Reports have for a number of years reported on the various sources, other than traffic, that influence the level of PM<sub>10</sub>. Such sources include sea spray, wind blown dust, dust directly emitted from quarrying, mechanically generated dust (e.g. from construction activities), marine traffic, tyre and brake abrasion, and fireworks. In the latest 2008 report, MEPA acknowledges that the *relative contributions of the various local sources of particulates, such as traffic and power generation emissions, mineral extraction and construction dust, as well as transboundary sources, need to be quantified in order to ensure an effective policy response.*

## CONCLUSIONS

57. The results clearly show that the impact of the Scheme on air quality on Triq Qui-Si-Sana is negligible. It has further been demonstrated that both PM<sub>10</sub> levels and NO<sub>2</sub> levels are within the required national and EU standards.

**Appendix 5: EIA Screening letter dated August 2014**

Our Ref: STS003/Screening STS

8<sup>th</sup> August 2014

Malta Environment and Planning Authority  
Attention: EIA Team (Ms Charlene Smith)

### **Re: Changes to the plans for the Sliema Townsquare Development**

1. This statement is being undertaken by the EIA Coordinator who carried out the EIA for the development of Sliema Townsquare (PA 1191/05: *Construct mixed development which includes a) shopping avenue, b) commercial areas and residential units, c) underground parking and service facilities at Old Union Club, Hugh Hallet Street, Tigne' Street, Sliema*) in order to assess whether the proposal as revised, and as currently being submitted to the Malta Environment and Planning Authority (MEPA), would have a significant impact on the environment beyond what was already assessed in the original Environmental Planning Statement (EPS).
2. In order to assess the proposed changes, the architects provided the plans as submitted to MEPA (refer to plans uploaded to MEPA on 1<sup>st</sup> August 2014) for the development of Sliema Townsquare. The master plan and 3D visual are found in **Appendix I** (a full set of plans is available at MEPA). The proposal is hereinafter referred to as 'the Scheme'.

#### **Background**

3. As a background to the Scheme, it is noted that an EPS was prepared on behalf of Townsquare Sliema Ltd (hereinafter referred to as 'the Applicant'), to support planning application PA 01191/05 for the redevelopment of the former Union Club site in Sliema into a high-rise residential and office complex with shopping / food and beverage / leisure facilities, as well as car parking. Planning application PA 01191/05 was validated by MEPA on 21<sup>st</sup> March 2005. The EPS was certified by MEPA in August 2007 and submitted for public consultation in September 2007. The EPS was based on a development comprising: 242 apartments, 8,847m<sup>2</sup> of retail / F&B and ancillary uses, 5,700m<sup>2</sup> of office space, and 800 car parking spaces.
4. Subsequently, following detailed discussions with MEPA, the Applicant changed the height of the development; in 2010, an EPS Update was submitted to assess these changes.
5. In June 2011, an Addendum to the EPS was prepared, in order to assess the impact on air quality from the Scheme. Comments on the Addendum were included in Appendix 5 of MEPA's Environment Report for the Scheme that was prepared in April 2012.



## **Proposed changes in the Scheme**

6. In terms of land uses, the Scheme comprises the following:
  - Number of residences – 181 apartments (34,800 m<sup>2</sup>, excluding terraces)
  - Offices – 4,719 m<sup>2</sup>
  - Retail – 9,105 m<sup>2</sup>
  - Parking – 721 spaces (parking provision can potentially be increased to 800 parking spaces as the layout may accommodate 2 and 3 car garages which are currently not included in the design).
7. In terms of the design of the Scheme, this is closer to what was being originally proposed in 2007. As stated above, a new set of drawings has been submitted to MEPA that take into account the new FAR policy as well as some refinement in the overall design.
8. The general massing of the proposed project, together with the location of the tower has remained unchanged.
9. The heights of the buildings vary from two double height commercial levels in the Villa Drago area, to an overlying additional 5 office levels in the central commercial avenue area. In the residential area, the levels vary from 9 in the lower residential buildings, reaching up to 33 in the central tower.
10. The proposed refined design has resulted in the shape of the tower and the surrounding buildings to having been changed to be more radial. A new periphery road around the top part of the residential site, which is linked to the main commercial avenue, has been introduced. The new pedestrian road has resulted in the increasing of the overall open space of the project.
11. The car park entrances and exit points have remained unchanged, however the internal circulation has changed due to the new structural elements which have now been defined in the parking levels.
12. In terms of geology, the impacts remain the same since it is envisaged that the same volume of material will be excavated.
13. In terms of cultural heritage, the main impacts previously identified were on Villa Drago. In the EPS, it was stated that:

*The Scheme's effect on Villa Drago is limited to the construction of the buildings within the curtilage, and the vibrations arising there from. Although planning permission was granted (vide PA 00470/00) for a covered walkway to be constructed from the southern façade of the Villa to the proposed pedestrian walkway along the southern boundary, current plans for the Villa are for it to remain freestanding and the facades to remain intact. The Scheme provides for the façade accretions added over the years to be removed and the Villa restored to as close to its original as*

*possible. The internal staircase and original layout will be retained. Since no features will be lost or damaged the impact is judged to be not significant. The restoration of the facades and the interior of the Villa, and the carrying out of structural repairs that are vital to the structural integrity of the building, are of major beneficial significance.*

14. The architects have confirmed that the above still holds with the current Scheme.
15. With regards to the alteration of the context of Villa Drago, the architects note that the nearest buildings in the Scheme will be 8.8 - 11 m from the nearest façade of the Villa, which is still in line with the planning permission granted under PA 00470/00. They also note that the height of these proposed buildings within the curtilage of the Villa is less than the height of the existing and proposed third party buildings in the surrounding area. The alteration of context is therefore judged to be not significant, as it was assessed in the original EPS.
16. In terms of air quality, the 2012 EPS Addendum considered the following Annual Average Daily Traffic (AADT) with the development: 27,627. Based on the same assumptions and methodology and taking account of the proposed land uses, the predicted AADT is 27,337. Given that the AADT is slightly less than was assessed in the 2012 Addendum, the impact on air quality is expected to remain the same as that assessed in the EPS Addendum.
17. In terms of wind, visual amenity, and shadowing (cumulatively termed as 'building performance' in the 2007 EPS), the impacts are expected to be very similar to the impacts identified in the 2007 EPS, because of the similar configuration of the buildings. Due to the alteration of the design of the tower and surrounding buildings, the visual impacts may potentially differ. Landscape impacts remain unchanged.
18. The social assessment also remains unchanged, because of the similar land uses proposed to those assessed in the 2007 EPS, as well as the similarity in the height of the buildings.
19. On the basis of all of the above, it is concluded that, the proposed changes envisaged by the Scheme are unlikely to significantly affect the findings of the certified EPS prepared for PAI 191/05 and its Updates and Addenda.

Yours sincerely,



Rachel Xuereb  
Director, Adi Associates

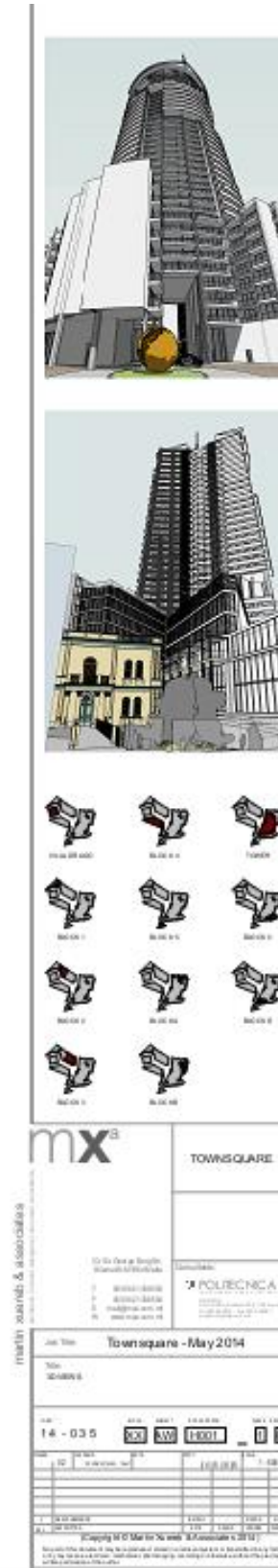


Adi Associates  
Environmental Consultants Ltd  
Kappara Business Centre  
113 Triq Birkirkara  
San Gwann SGN 4197, Malta  
Tel/Fax +356 21378172 / 21378177  
info@adi-associates.com  
[www.adi-associates.com](http://www.adi-associates.com)

## **Appendix I: Proposed plans**

[illegible]





**Appendix 6: An EIA statement dated September 2015**

Our Ref: STS006

30<sup>th</sup> September 2015

Malta Environment and Planning Authority  
Attention: EIA Team (Ms Charlene Smith)

## **Re: Changes to the plans for the Sliema Townsquare Development**

1. This statement is being undertaken by the EIA Coordinator who carried out the EIA for the development of Sliema Townsquare (PA 1191/05: *Construct mixed development which includes a) shopping avenue, b) commercial areas and residential units, c) underground parking and service facilities at Old Union Club, Hugh Hallet Street, Tigne' Street, Sliema*) in order to assess whether the proposal as revised, and as currently being submitted to the Malta Environment and Planning Authority (MEPA), would have a significant impact on the environment beyond what was already assessed in the original Environmental Planning Statement (EPS).
2. In order to assess the proposed changes, the architects provided the plans as submitted to MEPA (refer to plans uploaded to MEPA on 6<sup>th</sup> July 2015) for the development of Sliema Townsquare. The master plan is found in **Appendix I** (a full set of plans is available at MEPA). The proposal is hereinafter referred to as 'the Scheme'.

### **Background**

3. As a background to the Scheme, it is noted that an EPS was prepared on behalf of Townsquare Sliema Ltd (hereinafter referred to as 'the Applicant'), to support planning application PA 01191/05 for the redevelopment of the former Union Club site in Sliema into a high-rise residential and office complex with shopping / food and beverage / leisure facilities, as well as car parking. Planning application PA 01191/05 was validated by MEPA on 21<sup>st</sup> March 2005. The EPS was certified by MEPA in August 2007 and submitted for public consultation in September 2007. The EPS was based on a development comprising: 242 apartments, 8,847m<sup>2</sup> of retail / F&B and ancillary uses, 5,700m<sup>2</sup> of office space, and 800 car parking spaces.
4. Subsequently, following detailed discussions with MEPA, the Applicant changed the height of the development; in 2010, an EPS Update was submitted to assess these changes.
5. In June 2011, an Addendum to the EPS was prepared, in order to assess the impact on air quality from the Scheme. Comments on the Addendum were included in Appendix 5 of MEPA's Environment Report for the Scheme that was prepared in April 2012.
6. In August 2014, further changes were made to the Scheme as follows:
  - Number of residences – 181 apartments (34,800 m<sup>2</sup>, excluding terraces);

- Offices – 4,719 m<sup>2</sup>;
- Retail – 9,105 m<sup>2</sup>; and
- Parking – 721 spaces.

7. The general massing of the proposed project, together with the location of the tower remained unchanged. The car park entrances and exit points remained unchanged, however, the internal circulation changed due to the new structural elements that were defined in the parking levels.
8. As a result of the proposed changes, a letter was prepared by Adi Associates confirming that the proposed changes were unlikely to significantly affect the findings of the certified EPS prepared for PA1191/05 and its Updates and Addenda.

### **2015 proposed changes to the Scheme**

9. Following further discussions with MEPA, the Scheme has again been revised as follows:
  - Number of residences – 163 apartments (33,277 m<sup>2</sup>, excluding terraces);
  - Offices – 4,719 m<sup>2</sup>;
  - Retail – 8,241 m<sup>2</sup>; and
  - Parking – 773 (parking provision can potentially be increased to 800 parking spaces as the layout may accommodate 2 and 3 car garages which are currently not included in the design).
10. The figures show that the number of residences, offices, and retail areas have been reduced from the original EPS while the car parking spaces have remained the same. The general massing of the project and the location of the tower has remained unchanged as its location had already been defined in previous studies. The east side of the development has been re-designed to implement a less congested design in the lower floors of the development. In this way, the majority of the apartments that were originally located adjacent to the tower building and which formed part of the base of the tower have been removed. The tower now starts from Level 0. The heights of the buildings vary from two double height commercial levels in the Villa Drago area, to an overlying additional 5 office levels in the central commercial avenue area. In the residential area, the levels vary from 8 to 15 levels on the side building which are close to the tower area, reaching up to 38 and 36 in the central tower itself. The proposed design results in a sleeker tower, albeit still based around the radial concept originally submitted. The periphery pedestrianised road has been brought inwards to pass around the base of the tower and is still directly linked to the main commercial avenue, to ensure a more open feel when walking around the development. The redesigned pedestrian road has resulted in an increase in the overall open space of the project. The car park entrances and exit points have remained unchanged, however, the internal circulation has changed due to the new structural elements which have now been defined in the parking levels.



## Impact assessment of new proposal

### Geo-environment

11. In terms of geology, the impacts remain the same since it is envisaged that the same volume of material will be excavated. As stated in Chapter 5 of the 2007 EPS, the waste to be excavated will either be reused or dumped in an approved quarry. This will be described in more detail in the eventual Construction Management Plan.

### Cultural Heritage

12. In terms of cultural heritage, the main impacts previously identified were on Villa Drago. In the EPS, it was stated that:

*The Scheme's effect on Villa Drago is limited to the construction of the buildings within the curtilage, and the vibrations arising there from. Although planning permission was granted (vide PA 00470/00) for a covered walkway to be constructed from the southern façade of the Villa to the proposed pedestrian walkway along the southern boundary, current plans for the Villa are for it to remain freestanding and the facades to remain intact. The Scheme provides for the façade accretions added over the years to be removed and the Villa restored to as close to its original as possible. The internal staircase and original layout will be retained. Since no features will be lost or damaged the impact is judged to be not significant. The restoration of the facades and the interior of the Villa, and the carrying out of structural repairs that are vital to the structural integrity of the building, are of major beneficial significance.*

13. The architects have confirmed that the above still holds with the current Scheme, although the current proposal also includes the raising of the open area to the North and East of the building. A restoration method statement has been prepared by Perit Edward Said (and has already been submitted to MEPA). In terms of the intervention at the basement, Section 3 of the method statement states

*As a Grade I listed site, strict conservation interventions must be adhered to however ensuring that it is given a suitable adaptive reuse. Generally speaking the fabric of the villa building is very well preserved, including substantial extents of the finishes. Every effort should be made to restore these as described in the following section. ....The proposed one-floor raised public space on the side and back would see the formation of an elevated walkway cover the basement level of the house with a gap allowing for ventilation. It is felt that this will not be detrimental to the villa building, but actually would improve the proportions of the side and back elevations once restored. The back terrace is of little architectural significance and the staircase leading down to the garden is a relatively recent construct. The terrace will be incorporated in the new raised public platforms whilst the staircase will be removed. As indicated in the proposed drawings parts of the said platforms will be planted with trees that will be able to grow to maturity.*

14. As stated by Perit Said this intervention is not expected to be detrimental to Villa Drago.
15. With regards to the alteration of the context of Villa Drago, the architects note that the nearest buildings in the Scheme will be 8.8 - 11 m from the nearest façade of the Villa, which is still in line with the planning permission granted under PA 00470/00. They also note that the height of these proposed buildings within the curtilage of the Villa is less than the height

of the existing and proposed third party buildings in the surrounding area. The alteration of context is therefore judged to be not significant, as it was assessed in the original EPS.

### **Air quality**

16. In terms of air quality, the 2012 EPS Addendum considered the following Annual Average Daily Traffic (AADT) generated by the Scheme: 4,240. The total amount of traffic generated by the Scheme + network traffic was 27,627. Based on the same assumptions and methodology and taking account of the proposed land uses, the predicted AADT from the Scheme is now 3,503; the traffic generated by the Scheme + network traffic is now estimated at 26,889. Given that the AADT is less than was assessed in the 2012 Addendum, the impact on air quality is expected to remain similar (or slightly improve) to that assessed in the EPS Addendum. The current proposal, therefore, will not affect the findings of the 2012 EPS Addendum and impacts remain unchanged.

### **Visual Assessment**

17. In terms of the visual amenity, a visual impact assessment has been undertaken (see **Appendix 2**). While most of the impacts have remained similar to those in the original EPS, the view from the Gzira promenade (VP2) has now been assigned as major (in the 2007 EPS it was minor), the viewpoint from Valletta (VP3) is moderate (in the 2007 EPS it was minor), and the viewpoint from is-Sur ta l-linglizi (VPI I) is moderate (in the 2007 EPS it was minor). Two additional viewpoints were also included in the assessment from Kalkara.
18. Landscape impacts remain unchanged.

### **Land uses**

19. The social assessment also remains similar, because of the similar land uses proposed to those assessed in the 2007 EPS, as well as the similarity in the height of the buildings.

### **Conclusion**

20. On the basis of the above, it is concluded that, with the exception of the visual assessment, impacts from the proposed Scheme remain the same as those assessed in the 2007 EPS and its subsequent Addenda.
21. In terms of cumulative impacts, these would mainly arise from the development itself and from the interaction with other proposed developments in the area being built at the same time as the Scheme. The former impacts have been assessed in the 2007 EPS and these remain unchanged. In terms of the interaction of impacts from proposed developments in the area, these are difficult to predict. Although a major development on the peninsula is the proposed 40-storey hotel development at the site of the former Holiday Inn near Fort Cambridge, this is still at planning stage and has no valid development permit.
22. Impacts would arise during construction from dust, noise and construction traffic although given that the two developments are at different planning stages and considering that the Fort Cambridge development is unlikely to require substantial excavation, the impacts may not overlap. Operationally there would be additional traffic, although the AADT of the proposed development at Fort Cambridge that would be passing along Triq Qui Si Sana is

unlikely to affect the assessment carried out in the 2012 EPS Addendum on air quality. This is because the Air Quality Assessment described in the 2012 EPS Addendum was based on an AADT from the Scheme of 4,240 whereas the current AADT is 3,503. Any increase in traffic along Triq Qui-Si-Sana by developments in the area that generate an AADT of up to 737 will not affect the findings of the 2012 EPS Addendum.

23. In terms of the cumulative visual impact it is anticipated that only viewpoints 1, 2, 3, 11, 12 and 13 would be affected – mainly through an increase in the magnitude of change of the view (receptors would be the same). While viewpoints 1, 2 and 12 have been assigned a major or moderate to major impact, and are therefore unlikely to change, it is possible that viewpoints 3, 11 and 13 could become major as a result of both developments.

Yours sincerely,



Rachel Xuereb  
Director, Adi Associates



Adi Associates  
Environmental Consultants Ltd  
Kappara Business Centre  
113 Triq Birkirkara  
San Gwann SGN 4197, Malta  
Tel/Fax +356 21378172 / 21378177  
info@adi-associates.com  
[www.adi-associates.com](http://www.adi-associates.com)

## **Appendix I: Proposed plans**



**Figure I: Proposed Master Plan**





Adi Associates  
Environmental Consultants Ltd  
Kappara Business Centre  
113 Triq Birkirkara  
San Gwann SGN 4197, Malta  
Tel/Fax +356 21378172 / 21378177  
info@adi-associates.com  
[www.adi-associates.com](http://www.adi-associates.com)

## **Appendix 2: Visual Impact Assessment**



**PA 01191/05**

**SLIEMA TOWNSQUARE**

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## **VISUAL IMPACT ASSESSMENT**

**Version 1: September 2015**



**Report Reference:**

**Adi Associates Environmental Consultants Ltd, 2015. Sliema Townsquare (PA 01191/05). Visual Impact Assessment. San Gwann, September 2015; iii + 25 pp + 2 Appendices.**

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## Quality Assurance

**Sliema Townsquare**  
**Visual Impact Assessment**  
September 2015

**Report for: Townsquare Sliema Ltd**

## Revision Schedule

Rev	Date	Details	Report prepared by:	Checked by:	Approved by:
00	Sep 2015	Submission to client	<b>Krista Farrugia</b> Senior Environmental Consultant	<b>Rachel Xuereb</b> Director	<b>Adrian Mallia</b> Managing Director

File ref: G:\\_Active Projects\EIA Screening\STS006 - EIA Update Sept 2015\Visual Impact Assessment STS.docx



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**Kappara Business Centre**  
**113 Triq Birkirkara**  
**San Gwann SGN 4197**  
**MALTA**

**Tel. / Fax: 21378172 - 77**

**Email: [info@adi-associates.com](mailto:info@adi-associates.com)**

**Web: [www.adi-associates.com](http://www.adi-associates.com)**

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## APPENDIX

Appendix 1: Scheme Masterplan
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## I. INTRODUCTION

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- I.1. This document has been prepared subsequent to MEPA's requirement<sup>1</sup> to assess the proposed changes for the development of Sliema Townsquare (PA 1191/05: *Construct mixed development which includes a) shopping avenue, b) commercial areas and residential units, c) underground parking and service facilities at Old Union Club, Hugh Hallet Street, Tigne' Street, Sliema*).
- I.2. In order to assess the proposed changes, the architects provided the plans as submitted to MEPA (refer to plans uploaded to MEPA on 6<sup>th</sup> July 2015) for the development of Sliema Townsquare. The master plan is found in **Appendix I** (a full set of plans is available at MEPA). The proposal is hereinafter referred to as 'the Scheme'.
- I.3. This report addresses the potential impacts of the Scheme on visual amenity. It describes the existing visual amenity of the Application Site and its surroundings, and assesses how this might change through the development of the Scheme.
- I.4. Visual impacts relate to the effect that a development would have on the amenity of sensitive receptors (those experiencing views of the site), relating to the actual or perceived visible changes to the character and quality of the landscape.
- I.5. The key issues for the assessment are:

**Key Issues:**

- **Changes in views of key receptors**

### **Background**

- I.6. As a background to the Scheme, it is noted that an EPS was prepared on behalf of Townsquare Sliema Ltd (hereinafter referred to as 'the Applicant'), to support planning application PA 01191/05 for the redevelopment of the former Union Club site in Sliema into a high-rise residential and office complex with shopping / food and beverage / leisure facilities, as well as car parking. Planning application PA 01191/05 was validated by MEPA on 21<sup>st</sup> March 2005. The EPS was certified by MEPA in August 2007 and submitted for public consultation in September 2007. The EPS was based on a development comprising: 242 apartments, 8,847m<sup>2</sup> of retail / F&B and ancillary uses, 5,700m<sup>2</sup> of office space, and 800 car parking spaces.
- I.7. Subsequently, following detailed discussions with MEPA, the Applicant changed the height of the development; in 2010, an EPS Update was submitted to assess these changes.

---

<sup>1</sup> E-mail from Ms Charlene Smith dated 10<sup>th</sup> August 2015

- I.8. In June 2011, an Addendum to the EPS was prepared, in order to assess the impact on air quality from the Scheme. Comments on the Addendum were included in Appendix 5 of MEPA's Environment Report for the Scheme that was prepared in April 2012.
- I.9. In August 2014, further changes to the Scheme were made as follows:
- Number of residences – 181 apartments (34,800 m<sup>2</sup>, excluding terraces);
  - Offices – 4,719 m<sup>2</sup>;
  - Retail – 9,105 m<sup>2</sup>; and
  - Parking – 721 spaces.
- I.10. The general massing of the proposed project, together with the location of the tower remained unchanged. The car park entrances and exit points remained unchanged, however, the internal circulation changed due to the new structural elements that were defined in the parking levels.
- I.11. As a result of the proposed changes, a letter was prepared by Adi Associates confirming that the proposed changes were unlikely to significantly affect the findings of the certified EPS prepared for PAI 191/05 and its Updates and Addenda.

### **Proposed changes to the Scheme**

- I.12. Following further discussions with MEPA, the Scheme has again been revised as follows:
- Number of residences – 163 apartments (33,277 m<sup>2</sup>, excluding terraces);
  - Offices – 4,719 m<sup>2</sup>;
  - Retail – 8,241 m<sup>2</sup>; and
  - Parking – 773 (parking provision can potentially be increased to 800 parking spaces as the layout may accommodate 2 and 3 car garages which are currently not included in the design).
- I.13. The figures show that the number of residences, offices, and retail areas reduced from the original EPS while the car parking spaces have remained the same. The general massing of the project and the location of the tower has remained unchanged as its location had already been defined in previous studies. The east side of the development has been re-designed to implement a less congested design in the lower floors of the development. In this way, the majority of the apartments that were originally located adjacent to the tower building and which formed part of the base of the tower, have been removed. The tower now starts from Level 0. The heights of the buildings vary from two double height commercial levels in the Villa Drago area, to an overlying additional 5 office levels in the central commercial avenue area. In the residential area, the levels vary from 8 to 15 levels on the side building which are close to the tower area, reaching up to 38 and 36 in the central tower itself. The proposed design results in a sleeker tower, albeit still based around the radial



concept originally submitted. The periphery pedestrianised road has been brought inwards to pass around the base of the tower and is still directly linked to the main commercial avenue, to ensure a more open feel when walking round the development. The redesigned pedestrian road has resulted in an increase in the overall open space of the project. The car park entrances and exit points have remained unchanged; however, the internal circulation has changed due to the new structural elements which have now been defined in the parking levels.

## **OBJECTIVES OF ASSESSMENT**

- I.14. The objectives of the visual amenity study were to:
- Undertake a baseline survey and characterisation of the visual amenity at and around the Scheme site using desk top and field survey techniques;
  - Identify the key viewpoints and receptors;
  - Predict the impacts of the Scheme on the visual amenity of the Area of Influence;
  - Input potentially beneficial design measures to the Scheme;
  - Assess the significance of the impacts on the visual amenity of the Area of Influence; and
  - Describe the mitigation measures designed into the Scheme to minimise adverse impacts and enhance any beneficial impacts on the visual amenity of the Scheme.

## **STANDARDS AND GUIDELINES**

- I.15. In view of the fact that there are no Malta-specific visual amenity assessment guidelines, the visual assessment was carried out in line with the UK's *Guidelines for Landscape and Visual Impact Assessment 2013* (GLVIA) (Institute of Environmental Management & Assessment (IEMA) and the Landscape Institute).

## **2. ASSESSMENT METHODOLOGY**

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- 2.1. The viewpoints were selected based on the viewpoints identified and selected in the 2007 EPS - these had originally been selected based on the Zone of Visual Influence (ZVI) and field surveys. A new ZVI<sup>2</sup> was also prepared (see **Figure 2.1**). The viewpoints are shown in **Figure 2.2**.

### **Sensitivity of visual receptors**

- 2.2. The sensitivity of visual receptors is dependent on the location from where the receptors experience the view, their expectations, occupation or activity at the viewpoint, and the importance of the view. UK Guidelines note that the most sensitive receptors may include:
- Users of outdoor recreation facilities whose attention or interest may be focused on the landscape;
  - Communities where the development results in changes to the landscape setting or valued views enjoyed by the community;
  - Visitors to heritage assets, or to other attractions, where views of the surroundings are an important contributor to the experience; and
  - Occupiers of residential properties with views affected by the development.
- 2.3. The Guidelines also note that other receptors could include people engaged in outdoor sport or recreation other than those involving an appreciation of the landscape, people travelling through the area, and people at their place of work. The latter are regarded as the least susceptible to changes in view.
- 2.4. The following definitions are used to categorise the sensitivity of receptors:
- High sensitivity receptors: those who repeatedly re-visit the viewpoint to partake of the view. Such views are generally highly valued by the community;
  - Moderate sensitivity receptors: itinerant visitors (mostly tourists) to the viewpoint; and
  - Low sensitivity receptors: road users, workers, etc.
- 2.5. Residents are not included above because views from private property are not protected under planning law or other public policy, except in so far as the zoning of the land implies certainty as to the type of development that may be permitted. The rights of nearby residents are, however, somewhat protected through the planning system, since they can object to any change of land use (or airspace). The landscape

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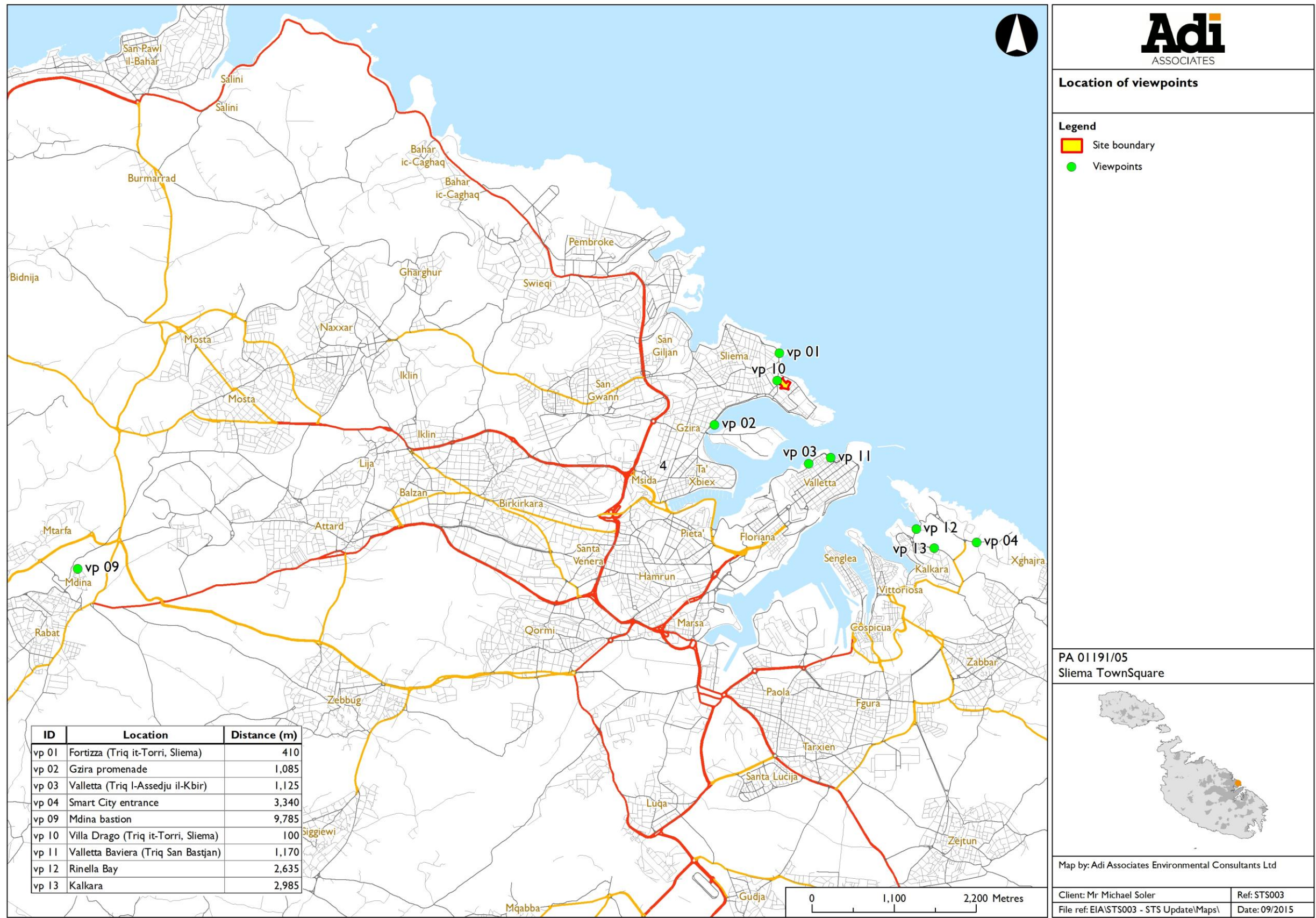
<sup>2</sup> In the 2013 GLVIA guidelines, this term has been replaced with the more accurate Zone of Theoretical Visibility (ZTV). ZVI is referred to in this document to facilitate consistency with the terminology used in the 2007 EPS.

and visual amenity process does not assess the impacts of a development on the rights or values of individuals, but rather on the public collectively, and those rights and values are as expressed in legislation and planning policy. It is for this reason that this assessment does not address the effects of loss of view from private properties, land ownership, etc.





**Figure 2.2: Location of viewpoints**



INDICATIVE ONLY - Not to be used for direct interpretation

### **Magnitude of visual change**

- 2.6. Identification of the magnitude of change depends on the size or scale in change in view (relating to the extent of visibility, degree of screening, angle of view and distance from the development) and the degree of contrast or integration of any new features with existing features as well as the duration and reversibility of visual effects. **Table 2.1** defines magnitude of visual change.

**Table 2.1: Magnitude of visual change**

<b>High</b>	<b>Medium</b>	<b>Low</b>	<b>Imperceptible Change</b>
A substantial change in view affecting a large number of viewers	A moderate change in view affecting many/some viewers	A smaller change in view affecting a low number of viewers	A small, barely perceptible or no change in view.

- 2.7. Potential sensitive receptors identified include:
- Recreational users of areas in the vicinity of the Site, walkers and joggers;
  - Visitors viewing the area from a medium distance viewpoint;
  - Road users (vehicle occupants and pedestrians); and
  - Workers.

### **DETERMINING IMPACT SIGNIFICANCE**

- 2.8. The significance of impacts on the visual amenity is dependent upon judgements about the value of the existing visual amenity compared to the new visual amenity that would be created, the number of people affected, the receptors' sensitivity to change, the magnitude, duration and permanency of the changes, and subjective judgements about the degree to which these changes would matter to those concerned.
- 2.9. The significance of visual impacts has been assessed in relation to:
- The number and sensitivity of receptors affected;
  - The duration of the changes;
  - The extent of visibility and distance from the Scheme;
  - The type of view – proportion of development visible, focus on Scheme due to proximity and whether it is fixed, transient, or sequential;
  - The changes to the view from the identified view points as shown by the photomontages; and
  - The scope for mitigation / enhancement measures to screen the development.

2.10. Based on the above criteria an assessment of the significance of the visual impact on each of the agreed viewpoints was made in terms of whether it is considered to be of:

- **Major significance** - *substantial changes in the view*. Where the extent of the impact on the view would be large in magnitude and affect a large number of receptors or is of particular importance to the viewers affected. May be an advertised viewpoint and/or a view with high amenity and scenic qualities and few intrusive elements in the view;
- **Moderate significance** – *moderate change to the view*. Where the extent of the impact on the view would be moderate in magnitude or extent and affect a moderate number of receptors or is of some importance to the viewers affected. May be a viewpoint from which there is a view with some visual amenity / intrinsic value (this may include views across, or within, a regionally or locally designated landscape) and potentially some intrusive elements to the view;
- **Minor significance** – *smaller changes to the view*. Where the extent of the impact on the view would be small in magnitude or extent, and affect relatively few receptors, or a larger number of receptors with passing interest in their visual environment. The view would have a low visual amenity / intrinsic value or with intrusive man-made elements within the view; or be
- **Not significant** - *little or no obvious changes to the view*. Where the extent of the impact on the visual amenity would be of limited importance in scale or magnitude, or affect persons of low sensitivity to change, and / or be a view of low intrinsic value. Alternatively, the impact would affect very few people, be transient and only affect a small part of the Scheme or panorama.

2.11. **Table 2.2** identifies impact significance in a tabular format. It should be noted that there is a gradual transition between categories and magnitude and sensitivity are not necessarily evenly weighted such that the final decision on significance comes down to a professional judgement. Impact significance is recorded as one of the four categories (not significant, minor, moderate, or major).

**Table 2.2: Identification of Impact Significance**

		Magnitude of change			
		Imperceptible	Low	Medium	High
Sensitivity of Receptor	Low	Not significant	Not significant or Minor	Minor	Minor or moderate
	Medium	Not significant	Minor	Moderate	Moderate or major
	High	Not significant	Minor or moderate	Moderate or major	Major



### 3. EXISTING CONDITIONS

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#### APPLICATION SITE VISIBILITY

- 3.1. In assessing views, there is often likely to be a continuum in the degree of visibility of the development from full view to no view. **Table 3.1** summarises the situation in respect of the Scheme and with regard to the following:
- Extent of site visibility – full view, partial view, glimpse or no view into the site at all demonstrates the exposure of the site and the processes thereon to public view.
    - The Scheme is not fully visible from any viewpoint. From viewpoints 4, 5, 6, and 7 the Scheme cannot be seen. It can be seen as a glimpse or partially from the rest of the viewpoints because of the screening effects of terrain and structure.
  - Proportion of development visible – expresses the proportion of the development (the Scheme) that would be visible from the viewpoints: full, most, some, small amount, or none.
    - The proportion of the Scheme that is visible from the viewpoints varies from a large proportion at the near viewpoints (viewpoints 1, 2, and 3) to just the upper part of the towers at the other viewpoints (4, 9, 10, 11, 12 and 13).
  - Focus on Scheme due to proximity – is an indicator of the distance from the Application Site and whether the viewpoint would focus on the development due to its proximity (i.e., it is the only thing to look at), or whether the Scheme is part of a panorama.
    - Viewpoints 1, 2, 3, 4, 9, 11, 12 and 13 provide panoramic views whereas Viewpoint 10 provides a proximity view.
  - Transient or sequential view – the principal receptors will have transient views of the Application Site. Transient views are those that pass quickly (like looking through a doorway as one walks past), and sequential views expose the receptor to different yet sequential views of the site. The latter allows the site to be viewed for a longer period and from different and changing perspectives.
    - All of the viewpoints are transient.



**Table 3.1: Summary of Application Site visibility from viewpoints**

	Viewpoints								
	VP1	VP2	VP3	VP4	VP9	VP10	VP11	VP12	VP13
Approximate distance of viewpoint from the centre of the Scheme (m)	410	1,085	1,125	3,340	9,785	100	1,170		
Extent of Scheme visibility	Partial	Partial	Partial	Partial	Partial	Partial	Partial	Partial	Partial
Proportion of Scheme visible	60%	40%	40%	20%	15%	15%	20%	20%	20%
Focus on Scheme due to proximity	Panorama	Panorama	Panorama	Panorama	Panorama	Proximity	Panorama	Panorama	Panorama
Transient or sequential view	Transient	Transient	Transient	Transient	Transient	Transient	Transient	Transient	Transient

Note: Scheme not visible from viewpoints 5,6, 7 and 8.



## **4. CHANGES IN THE VISUAL AMENITY**

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- 4.1. Changes to the visual amenity were assessed from suitable viewpoints as described above and presented below. It is noted that in the original EPS the Scheme was not visible from the following viewpoints so photomontages were not prepared for the new Scheme:
- Viewpoint 5: Bighi;
  - Viewpoint 6: Vittoriosa;
  - Viewpoint 7: Triq Garibaldi, Luqa; and
  - Viewpoint 8: University of Malta.
- 4.2. Two additional viewpoints from Kalkara (VPI2 and VI3) were selected.

**Viewpoint I: Near Preluna Hotel**



<b>Viewpoint I</b>	Near Preluna Hotel / Fortizza on Triq it-Torri	 <p>TOWNSQUARE DESIGN PROPOSAL VIEWPOINT REFERENCE: 02 - Existing view</p> <p>Camera height: 1.5m Date of photograph: 11-Sep-15 Photomontages by: <a href="http://www.vrsmalta.com">www.vrsmalta.com</a></p>
Location	Sliema	
Key features	<p>Panoramic view across Tigne Peninsula and the Application Site. Typical seafront development rising to 7 or 8 storeys, presenting a largely regular skyline with highrise development in the background and towards the edge of the view.</p> <p>Low to moderate visual amenity, low to moderate intrinsic value.</p>	
Sensitive receptors	Users of the footpath for walking, sightseeing and recreation - tourists and locals: considerable numbers of moderate to high sensitive viewers. Road users – low sensitive receptors	
Change to Visual Amenity	A large change to the amenity whereby the Scheme dominates the skyline.	 <p>TOWNSQUARE DESIGN PROPOSAL VIEWPOINT REFERENCE: 02 - Proposed view</p> <p>Camera height: 1.5m Date of photograph: 11-Sep-15 Photomontages by: <a href="http://www.vrsmalta.com">www.vrsmalta.com</a></p>
Impact	<p>A large change to the overall view of low to moderate intrinsic value affecting a moderate / high number of moderate to high and low sensitive receptors.</p> <p>Impact: Major significance.</p>	



**Viewpoint 2: Gzira seafront (near Manoel Island Bridge)**



<b>Viewpoint 2</b>	Gzira seafront near bridge to Manoel Island	 <p>TOWNSQUARE DESIGN PROPOSAL VIEWPOINT REFERENCE: 01 - Existing view</p> <p>Camera height: 1.5m Date of photograph: 11-Sep-15 Photomontages by: V2 www.vrsmalta.com</p>
Location	Gzira	
Key features	<p>Panoramic view of Marsamxett Harbour towards the Tigne peninsula including the Application Site. Typical seafront view with relatively low rise development on the Gzira side with high rise buildings on the peninsula. A number of cranes are noticeable in the skyline amongst the urban development. Small seacraft dotted throughout the harbour clutter the view onto the sea.</p> <p>Low to moderate visual amenity, low to moderate intrinsic value.</p>	
Sensitive receptors	Users of the footpath for walking, sightseeing and recreation - tourists and locals: considerable numbers of moderate to high sensitive viewers. Road users – low sensitive receptors	
Change to Visual Amenity	Skyline broken by the Scheme tower. The sense of scale and continuity afforded by the existing development is interrupted by the tower that, from this viewpoint, appears to be located at a slight distance from the rest of the highrise development on the Tigne peninsula resulting in a large change to the urban fringe.	
Impact	<p>A large change to the overall view of low to moderate intrinsic value affecting a considerable number of moderate to high and low sensitive receptors.</p> <p>Impact: Major significance.</p>	 <p>TOWNSQUARE DESIGN PROPOSAL VIEWPOINT REFERENCE: 01 - Proposed view</p> <p>Camera height: 1.5m Date of photograph: 11-Sep-15 Photomontages by: V2 www.vrsmalta.com</p>

**Viewpoint 3: Valletta**

<b>Viewpoint 3</b>	Triq l-Assedju l-Kbir (near swings)	 <p>TOWNSQUARE DESIGN PROPOSAL VIEWPOINT REFERENCE: 11 - Existing view</p> <p>Camera height: 1.5m Date of photograph: 11-Sep-15 Photomontages by: VZ www.vrsmalta.com</p>
Location	Valletta	
Key features	<p>Panoramic view of Marsamxett Harbour towards the Tigne peninsula including the Application Site. More typical seafront view with relatively low rise development on the Gzira side with newer, dense high rise buildings dominating the peninsula.</p> <p>Moderate visual amenity, moderate intrinsic value.</p>	
Sensitive receptors	Users of the footpath for walking, sightseeing and recreation - tourists and locals: considerable numbers of moderate to high sensitive viewers. Road users – low sensitive receptors	
Change to Visual Amenity	The skyline is broken by the Scheme tower as the tower is the tallest building on the peninsula. The change is noticeable.	
Impact	<p>A noticeable change to the overall view of moderate intrinsic value affecting a considerable number of low and moderate to high sensitive receptors.</p> <p>Impact: Moderate significance.</p>	 <p>TOWNSQUARE DESIGN PROPOSAL VIEWPOINT REFERENCE: 11 - Proposed view</p> <p>Camera height: 1.5m Date of photograph: 11-Sep-15 Photomontages by: VZ www.vrsmalta.com</p>





**Viewpoint 4: From Smart City**

<b>Viewpoint 4</b>	Near Mediterranean Film Studios	 <p>TOWNSQUARE DESIGN PROPOSAL VIEWPOINT REFERENCE: 06 - Existing view</p> <p>Camera height: 1.5m Date of photograph: 11-Sep-15 Photomontages by: V2 www.vrsmalta.com</p>
Location	Kalkara	
Key features	<p>Panoramic view across a rural area including the film studios towards Tigne peninsula and the Application Site. Skyline comprising urban areas are noticeable in the distance.</p> <p>Moderate visual amenity, moderate intrinsic value.</p>	
Sensitive receptors	Workers and road users to the area: moderate numbers of low sensitivity receptors.	
Change to Visual Amenity	Skyline broken by the Scheme resulting in a noticeable change to the urban skyline that is seen in the distance.	 <p>TOWNSQUARE DESIGN PROPOSAL VIEWPOINT REFERENCE: 07 - Proposed view</p> <p>Camera height: 1.5m Date of photograph: 11-Sep-15 Photomontages by: V2 www.vrsmalta.com</p>
Impact	<p>A noticeable change to the overall view of moderate intrinsic value affecting a moderate number of low sensitive receptors.</p> <p>Impact: Minor significance.</p>	





**Viewpoint 9: Mdina Bastions**

<b>Viewpoint 9</b>	Mdina Bastion	 <p>TOWNSQUARE DESIGN PROPOSAL VIEWPOINT REFERENCE: 12 - Existing view</p> <p>Camera height: 1.5m    Date of photograph: 11-Sep-15    Photomontages by: <a href="http://www.vrsmafa.com">www.vrsmafa.com</a></p>
Location	Mdina	
Key features	<p>Panoramic view over the Central Plain including rural scenes as well as the urban fabric in the distance and the sea on the horizon.</p> <p>Moderate to high visual amenity, moderate to high intrinsic value.</p>	
Sensitive receptors	Visitors to the Bastion viewpoint – high sensitive viewers.	
Change to Visual Amenity	Transient distant view of the Scheme that breaks the skyline: change slightly noticeable.	
Impact	<p>A small to barely noticeable change to the distant view that is unlikely to affect the receptors.</p> <p>Impact: Not significant</p>	 <p>TOWNSQUARE DESIGN PROPOSAL VIEWPOINT REFERENCE: 12 - Proposed view</p> <p>Camera height: 1.5m    Date of photograph: 11-Sep-15    Photomontages by: <a href="http://www.vrsmafa.com">www.vrsmafa.com</a></p>





**Viewpoint 10: Triq it-Torri**



<b>Viewpoint 10</b>	Near entrance to Villa Drago	 <p>TOWNSQUARE DESIGN PROPOSAL VIEWPOINT REFERENCE: 04 - Existing view</p> <p>Camera height: 1.5m Date of photograph: 11-Sep-15 Photomontages by: V7 www.v7malta.com</p>
Location	Sliema	
Key features	<p>Transient view sandwiched between existing low rise buildings. Skyline / view framed by latter buildings; the Norfolk pine creates a sense of scale.</p> <p>Low visual amenity, because of state of buildings, moderate intrinsic value.</p>	
Sensitive receptors	Users of the footpath: considerable numbers of moderate sensitive viewers. Road users – low sensitive receptors.	
Change to Visual Amenity	Skyline broken by the Scheme. The sense of scale and continuity afforded by the existing development is over-powered by the Scheme. A large change in magnitude.	 <p>TOWNSQUARE DESIGN PROPOSAL VIEWPOINT REFERENCE: 04 - Proposed view</p> <p>Camera height: 1.5m Date of photograph: 11-Sep-15 Photomontages by: V7 www.v7malta.com</p>
Impact	<p>A major change affecting considerable number of moderate and low sensitivity receptors.</p> <p>Impact: Major significance.</p>	



**Viewpoint II: Is-Sur Ta' l-Inglizi**


<b>Viewpoint II</b>	At is-Sur Ta' L-Inglizi (Baviera)	 <p>TOWNSQUARE DESIGN PROPOSAL VIEWPOINT REFERENCE: 10 - Existing view</p> <p>Camera height: 1.5m Date of photograph: 11-Sep-15 Photomontages by: V&amp;A www.vrsmalta.com</p>
Location	Valletta	
Key features	<p>This is a panoramic view across Marsamxett Harbour towards Tigne Point and the Application Site. Typical seafront development by the coast with dense highrise buildings that dominant the skyline.</p> <p>Moderate visual amenity, moderate intrinsic value.</p>	
Sensitive receptors	Users of the footpath for walking sightseeing and recreation – tourists and locals: considerable numbers of moderate to high sensitive viewers. Road users – low sensitive receptors.	
Change to Visual Amenity	Skyline broken by the existing high rise development including Midi, Fortina and Fort Cambridge developments. The Scheme sits behind all of these developments and it extends above the area over which the highrise development predominates, rising higher than the existing buildings. A noticeable change.	
Impact	<p>A noticeable change affecting considerable number of moderate to high and low sensitivity receptors.</p> <p>Impact: Moderate significance.</p>	 <p>TOWNSQUARE DESIGN PROPOSAL VIEWPOINT REFERENCE: 10 - Proposed view</p> <p>Camera height: 1.5m Date of photograph: 11-Sep-15 Photomontages by: V&amp;A www.vrsmalta.com</p>

**Viewpoint 12: Rinella Bay, Kalkara**

<b>Viewpoint 12</b>		
Location	Rinella Bay, Kalkara	
Key features	<p>This is a panoramic view across the Bay towards the Grand Harbour and its bastions. Behind the bastions church cupolas are distinct. Newer development on the Tigne peninsula is also visible in the distance. A couple of boats dot the otherwise unobstructed seaview. The bastions frame either side of the view; Villa Bighi is also partly visible on the left and an operational quay on the right.</p> <p>Moderate to high visual amenity, moderate to high intrinsic value.</p>	
Sensitive receptors	Bathers using the area for recreation – tourists and locals: moderate numbers of moderate to high sensitive viewers.	
Change to Visual Amenity	The Scheme interrupts the otherwise relatively uniform historic view. A noticeable change.	
Impact	<p>A noticeable change affecting a moderate number of moderate to high sensitivity receptors.</p> <p>Impact: Moderate to major significance.</p>	 <p>TOWNSQUARE DESIGN PROPOSAL VIEWPOINT REFERENCE: 05 - Existing view</p> <p>Camera height: 1.5m Date of photograph: 11-Sep-15 Photomontages by: V2 www.vrsmalta.com</p>  <p>TOWNSQUARE DESIGN PROPOSAL VIEWPOINT REFERENCE: 05 - Proposed view</p> <p>Camera height: 1.5m Date of photograph: 11-Sep-15 Photomontages by: V2 www.vrsmalta.com</p>



**Viewpoint 13: Kalkara**

<b>Viewpoint 13</b>		
Location	Triq il-Missjoni Taljana, Kalkara	
Key features	<p>This is a rural view with the Grand Harbour and its bastions in the background. The close view is agricultural in nature with a tall pylon interrupting the view. In the distance behind the sea, the bastions are visible and the highrise development on the Tigne peninsula is also evident.</p> <p>Moderate visual amenity, moderate high intrinsic value.</p>	
Sensitive receptors	Passers-by and road users: low to moderate numbers of low to moderate sensitive viewers.	
Change to Visual Amenity	A noticeable change on the peninsula rising above the existing high rise buildings.	
Impact	<p>A noticeable change affecting a low to moderate number of low to moderate sensitivity receptors.</p> <p>Impact: Minor to moderate significance.</p>	



## **5. SUMMARY OF IMPACTS**

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- 5.1. **Table 5.1** summarises the impact assessment.
- 5.2. The impact of the Scheme on the visual amenity of the area portrayed in the above photographs and photomontages varies depending on the viewpoint. Impacts range from not significant to major.
- 5.3. Residual impacts remain the same as the impacts identified in the impact assessment.

**Table 5.1: Summary of Impacts on Landscape and Visual Amenity**

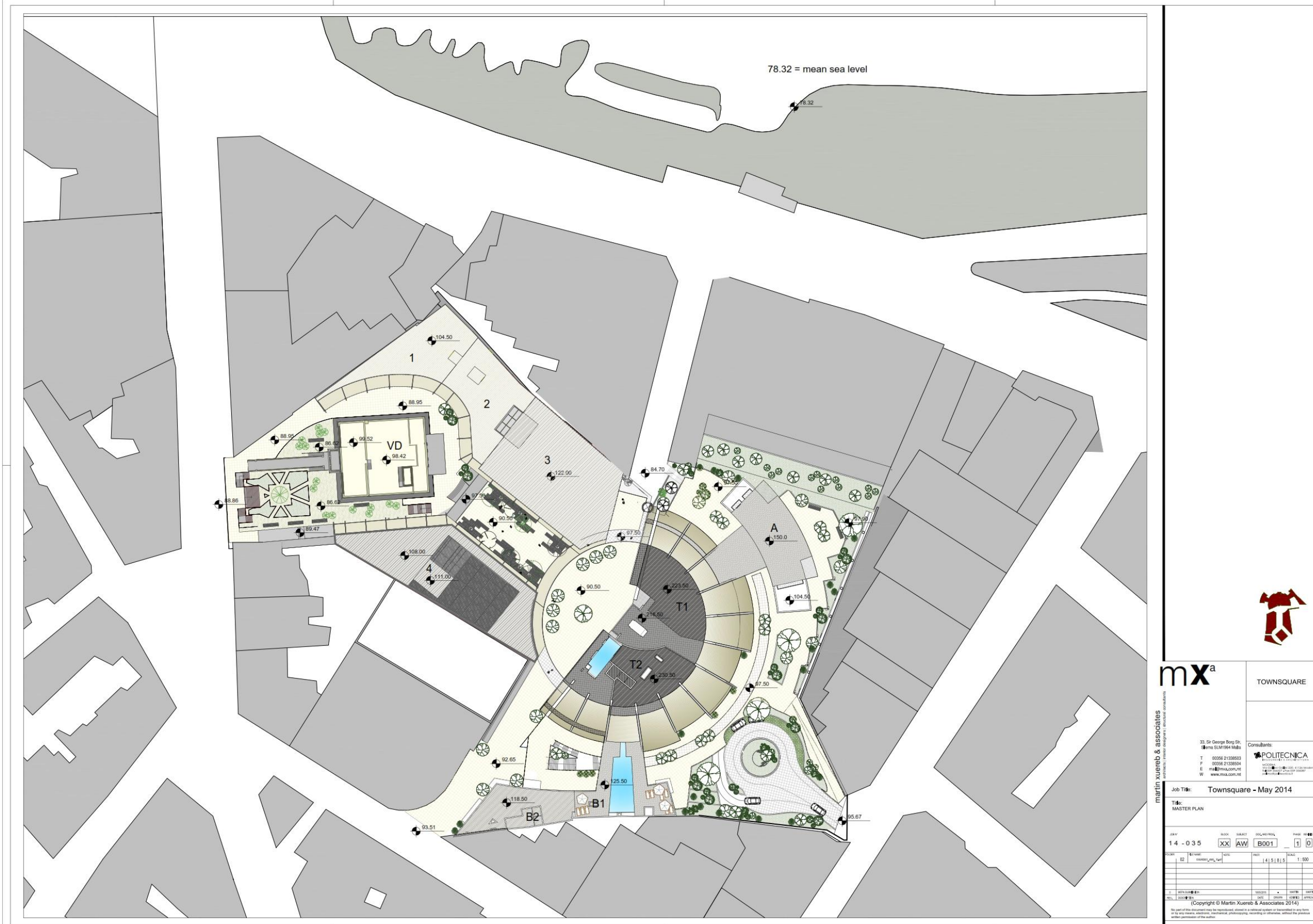
Asset Impacted	Beneficial/ Adverse / Neutral	Nature, scale and type of impact						Policy Importance	Probability of impact occurring	Significance of impact	Proposed mitigation measures	Significance of residual impact
		Const'n / Oper'n	Extent of impact (Nat. / Local / Site)	Direct / Indirect	S-term / L-term	Perm / Temp	Revers / Irrevers	(Internat. / National / Local)	(Likely / Unlikely / Remote / Uncertain)	(Major / Minor / Not significant)		(Major / Minor / Not significant)
Viewpoint 1: Triq it-Torri	Adverse	Oper'n	Local	Direct	L-term	Perm	Revers	Local	Likely	Major	None	Major
Viewpoint 2: Gzira promenade	Adverse	Oper'n	Local	Direct	L-term	Perm	Revers	Local	Likely	Major	None	Major
Viewpoint 3: Triq l-Assedju l-Kbir	Adverse	Oper'n	Local	Direct	L-term	Perm	Revers	Local	Likely	Moderate	None	Moderate
Viewpoint 4: Smart City entrance	Adverse	Oper'n	Local	Direct	L-term	Perm	Revers	Local	Likely	Minor	None	Minor
Viewpoint 9: Mdina bastions	Adverse	Oper'n	Local	Direct	L-term	Perm	Revers	Local	Likely	Not significant	None	Not significant
Viewpoint 10: Villa Drago	Adverse	Oper'n	Local	Direct	L-term	Perm	Revers	Local	Likely	Major	None	Major
Viewpoint 11: Is-Sur Ta l-Inglizi (Baviera)	Adverse	Oper'n	Local	Direct	L-term	Perm	Revers	Local	Likely	Moderate	None	Moderate

Asset Impacted	Beneficial/ Adverse / Neutral	Nature, scale and type of impact						Policy Importance	Probability of impact occurring	Significance of impact	Proposed mitigation measures	Significance of residual impact
		Const'n / Oper'n	Extent of impact (Nat. / Local / Site)	Direct / Indirect	S-term / L-term	Perm / Temp	Revers / Irrevers	(Internat. / National / Local)	(Likely / Unlikely / Remote / Uncertain)	(Major / Minor / Not significant)		(Major / Minor / Not significant)
VP12: Rinella Bay, Kalkara	Adverse	Oper'n	Local	Direct	L-term	Perm	Revers	Local	Likely	Moderate to major	None	Moderate to major
VP13: Kalkara	Adverse	Oper'n	Local	Direct	L-term	Perm	Revers	Local	Likely	Minor to Moderate	None	Minor to Moderate

## **APPENDIX I**

### **Scheme Masterplan**





**mx<sup>a</sup>**

TOWNSQUARE

martin xuereb & associates

23, St George Road, St. George's  
Gozo (SM/964 Malt)

T 00356 2138653  
F 00356 2138654  
E [info@mxgo.com](mailto:info@mxgo.com)  
W [www.mxgo.com](http://www.mxgo.com)

**CONSULTANTS:**

**POLITECNICA**  
ARCHITECTURE & ENGINEERING  
100, St. George Road, St. George's  
Gozo (SM/964 Malt)

Job Title: Townsquare - May 2014

Title: MASTER PLAN

REV	DATE	BY	CHKD	APPD	DESCRIPTION
14 - 035		XX	AW	B001	1

REV	DATE	BY	CHKD	APPD	DESCRIPTION
02					14.5.15

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## **APPENDIX 2**

### **Base Photos and Photomontages**



**Viewpoint I: Base photo**



**TOWNSQUARE DESIGN PROPOSAL**  
**VIEWPOINT REFERENCE: 02 - Existing view**

Camera height: 1.5m

Date of photograph: 11-Sep-15

Photomontages by: [vrsmalta.com](http://www.vrsmalta.com)



**Viewpoint I: Photomontage**



**TOWNSQUARE DESIGN PROPOSAL**  
**VIEWPOINT REFERENCE: 02 - Proposed view**

Camera height: 1.5m

Date of photograph: 11-Sep-15

Photomontages by:  [www.vrsmalta.com](http://www.vrsmalta.com)



**Viewpoint 2: Base photo**



**TOWNSQUARE DESIGN PROPOSAL**  
**VIEWPOINT REFERENCE: 01 - Existing view**

Camera height: 1.5m    Date of photograph: 11-Sep-15    Photomontages by: **VR** [www.vrsmalta.com](http://www.vrsmalta.com)



**Viewpoint 2: Photomontage**



**TOWNSQUARE DESIGN PROPOSAL**  
VIEWPOINT REFERENCE: 01 - Proposed view

Camera height: 1.5m

Date of photograph: 11-Sep-15

Photomontages by:  [www.vrsmalta.com](http://www.vrsmalta.com)



**Viewpoint 3: Base photo**



**TOWNSQUARE DESIGN PROPOSAL**  
**VIEWPOINT REFERENCE: 11 - Existing view**

Camera height: 1.5m

Date of photograph: 11-Sep-15

Photomontages by: [www.vrsmalta.com](http://www.vrsmalta.com)



**Viewpoint 3: Photomontage**



**TOWNSQUARE DESIGN PROPOSAL**  
VIEWPOINT REFERENCE: 11 - Proposed view


Camera height: 1.5m    Date of photograph: 11-Sep-15    Photomontages by:  [www.vrsmalta.com](http://www.vrsmalta.com)



**Viewpoint 4: Base photo**



**TOWNSQUARE DESIGN PROPOSAL**  
VIEWPOINT REFERENCE: 06 - Existing view

Camera height: 1.5m    Date of photograph: 11-Sep-15    Photomontages by:  [www.vrsmalta.com](http://www.vrsmalta.com)



**Viewpoint 4: Photomontage**



**TOWNSQUARE DESIGN PROPOSAL**  
VIEWPOINT REFERENCE: 06 - Proposed view

Camera height: 1.5m

Date of photograph: 11-Sep-15

Photomontages by:  [www.vrsmalta.com](http://www.vrsmalta.com)



**Viewpoint 9: Base Photo**



**TOWNSQUARE DESIGN PROPOSAL**  
VIEWPOINT REFERENCE: 12 - Existing view

Camera height: 1.5m    Date of photograph: 11-Sep-15    Photomontages by:  [www.vrsmalta.com](http://www.vrsmalta.com)



**Viewpoint 9: Photomontage**



**TOWNSQUARE DESIGN PROPOSAL**  
VIEWPOINT REFERENCE: 12 - Proposed view

Camera height: 1.5m    Date of photograph: 11-Sep-15    Photomontages by:  [www.vrsmalta.com](http://www.vrsmalta.com)



**Viewpoint I0: Base photo**



**TOWNSQUARE DESIGN PROPOSAL**  
**VIEWPOINT REFERENCE: 04 - Existing view**

Camera height: 1.5m

Date of photograph: 11-Sep-15

Photomontages by: **Vr** [www.vrsmalta.com](http://www.vrsmalta.com)



**Viewpoint I0: Photomontage**



**TOWNSQUARE DESIGN PROPOSAL**  
VIEWPOINT REFERENCE: 04 - Proposed view

Camera height: 1.5m

Date of photograph: 11-Sep-15


Photomontages by: **Vr** [www.vrsmalta.com](http://www.vrsmalta.com)



**Viewpoint 11: Base photo**



**TOWNSQUARE DESIGN PROPOSAL**  
VIEWPOINT REFERENCE: 10 - Existing view

Camera height: 1.5m    Date of photograph: 11-Sep-15    Photomontages by:  [www.vrsmalta.com](http://www.vrsmalta.com)



**Viewpoint II: Photomontage**



**TOWNSQUARE DESIGN PROPOSAL**  
VIEWPOINT REFERENCE: 10 - Proposed view

Camera height: 1.5m

Date of photograph: 11-Sep-15


Photomontages by:  [www.vrsmalta.com](http://www.vrsmalta.com)



**Viewpoint 12: Base photo**



**TOWNSQUARE DESIGN PROPOSAL**  
VIEWPOINT REFERENCE: 05 - Existing view


Camera height: 1.5m    Date of photograph: 11-Sep-15    Photomontages by:  [www.vrsmalta.com](http://www.vrsmalta.com)



**Viewpoint 12: Photomontage**



**TOWNSQUARE DESIGN PROPOSAL**  
VIEWPOINT REFERENCE: 05 - Proposed view


Camera height: 1.5m    Date of photograph: 11-Sep-15    Photomontages by:  [www.vrsmalta.com](http://www.vrsmalta.com)



**Viewpoint 13: Base photo**



**TOWNSQUARE DESIGN PROPOSAL**  
**VIEWPOINT REFERENCE: 07 - Existing view**


Camera height: 1.5m    Date of photograph: 11-Sep-15    Photomontages by:  [www.vrsmalta.com](http://www.vrsmalta.com)



**Viewpoint 13: photomontage**



**TOWNSQUARE DESIGN PROPOSAL**  
**VIEWPOINT REFERENCE: 07 - Proposed view**

Camera height: 1.5m    Date of photograph: 11-Sep-15    Photomontages by:  [www.vrsmalta.com](http://www.vrsmalta.com)