

## ENVIRONMENTAL IMPACT ASSESSMENT SCOPING REPORT. RESIDENSIAL COMPLEX IN RAFINA - PIKERMI CITY, GREECE.

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### **Abstract**

*The purpose of a scoping environmental impact assessment development is to identify the likely significant environmental and social impacts of a development proposal such that an evident, focused and robust environmental statement is produced. Formal scoping for the development described in the current study is not a required procedure and not a legally binding statement. The development consists of a residential complex in Rafina - Pikermi in Attika in Greece, composed from twelve luxury residences of approximately 500 square meters each in a site of 2700 square meters each. The complex is located next to the nature reserved recognized as 'Corine' protected zone under Greek Law.*

**Keywords:** *Environmental Assessment, Sustainability, Infrastructure Planning*

### **Introduction**

The purpose of a scoping environmental impact assessment development is to identify the likely significant environmental and social impacts of a development proposal such that an evident, focused and robust environmental statement is produced. Formal scoping for the development described in the current study is not a required procedure and not a legally binding statement. The development consists of a residential complex in Rafina - Pikermi in Attika in Greece, composed from twelve luxury residences of approximately 500 square meters each in a site of 2700 square meters each. The complex is located next to the nature reserved recognized as 'Corine' protected zone under Greek Law.

According to the Greek Law No 4014/2011 (implementation of Ministerial Decree No 1958/2012, Greek OJ No 21/B/2012, Greek Law No 2229/1994, Greek Law No 1650/1986 and Directive 42/2001 / EC ), the project is classified as private project Category B (Annex II) under Group No 6, 'Tourist Facilities and Urban Development, Building Sector, Sport and Leisure', where is considered not a necessity to develop an environmental impact assessment, but it is subject of a 'Scoping Report' (i.e. Standard Environmental Commitments). The classification was made according to the following criteria.

- Type and size of the project
- Nature and quantity of pollutants emitted
- Ability to prevent the production of pollutants by the applied manufacturing process
- The risk of accidents and restriction for the protections of the environment

### **Application Site**

Rafina-Pikermi is situated at the northern edge of the Mesogaia plain, south of the mount Pentelicus. It is 5 km east of Pallini and 19 km east of Athens city Center, 5km north of Artemida, and 7 km south of Nea Makri. The municipal unit Pikermi consists of the settlements Pikermi, Dioni and Drafi where the application site is. The municipal unit contains, besides the city itself, a large portion of the surrounding area, which is mostly woodland and farmland. Rafina-Pikermi is a port town serving ferries to southern part of Euboea likewise most of the

Cyclades. Its port is considered the second largest of Attica, after that of Piraeus. Its population reaches about twelve thousand people and climbs up to 30 or even 50 thousand during summer period.

The application site covers an area of approximately 32,5 square kilometers predominantly comprising of wild and sparse scrubland land next to the mount Pentelicus which is nature reserve recognized as 'Corine' protected zone under Greek Law. The application site is bound to the east by provincial road Marathonos and to the west from the provincial road Psaron and the protected mount Pentelicus. The application site is not within but adjacent to an environmentally sensitive area and therefore is not considered to represent an environmentally sensitive location based on land usage regulations, which is, besides the city itself, primarily residential.

Access is achieved by the Greek National Road 54 (Athens-Rafina) which passes through Pikermi-Rafina. Also the town can be accessed through Greek National Road 83 (Athens – Marathon – Rafina) and Greek National Road 85 (Lavrio – Rafina).

### **Proposed Development**

The applicant's design team, led by architects, civil and environmental engineers, has been working on a plan for the (re-)development of the estate. Whilst the proposals are necessarily broad at this stage, it is expected that the development would provide:

1. The demarcation of the plot. A large slope plot of 32.5 square kilometers
2. The division of the plot in twelve isomeric and independent plots
3. The clearance of each division from earlier constructions, flora and trees where applicable.
4. The construction in each one of the twelve plots, a high quality four level luxury villa of 500 square meters. Two levels underground, two levels over ground, total height of each construction together with its sloped roof will be less than twelve meters, with exploitation of 10% land cover in each plot.
5. The design and regeneration of the surrounding landscape for each one of the twelve plots accordingly, which will include levelling the slope, outdoor installations (e.g. parking spots) and the construction of a swimming pool.

Following this, it is anticipated that the construction works will take place in phases lasting approximately three years in total.

The building plots will be sized and orientated to relate to the adjacent street network. They would therefore facilitate improved pedestrian accessibility and permeability, within the site and to the surrounding areas.

Each plot would contain a variety of built form typologies, distributing a mixture of low and medium rise building across the Site. Generally, the tallest of the medium rise building would be located within the lowest levels of the slope. Not all of the residential units are anticipated to be dual aspect homes. Existing trees would be retained wherever possible. A landscape strategy will be developed to identify locations for new tree planting within and adjacent to the development

- The following are considered to be the key aspirations for the proposed development:
- Create a vibrant sustainable neighbourhood which reconnects with the existing community
- Build a new neighbourhood and contribute to establishing the town centre
- Demonstrate a long-term commitment to transforming and delivering regeneration within the district
- Develop coequal and complete range of measures to maximise the efficient use of natural resources limit carbon emission and minimise waste
- Produced new buildings that are well designed, flexible and energy efficient

- Achieve viability through the entire lifecycle to secure ceaseless progress with regeneration aims.

A set of development criteria will be devised and assessed as part of this scoping report. At this stage the parameters will be defined by such conditions including:

- The maximum footprint of the proposed development
- The maximum heights of the proposed development
- The maximum quantum of floor space proposed as a total. (and in relation to the uses proposed)
- Landscaping and open space
- Access and Linkages

It is anticipated that the proposed development will comprise the following key components:

Site clearance including destruction of any existing buildings required

- Up to 12 luxury residences
- Open space and landscaping
- Access, parking

In the context of the environmental impact assessment process, ‘scoping’ refers to the process of identifying those environmental aspects that may be significantly affected by the proposed development. In doing so, the potential significance of impacts associated with each environmental aspect becomes clearly defined resulting in the identification of a number of priority issues to be addressed in the environmental impact assessment.

Defining the scope of an environmental impact assessment is therefore an important part of the overall environmental impact assessment process, and is recommended by best practice.

## **Alternatives**

### Other Land Use Options

#### *1. High Density Residential Choice*

The provision of a high-density residential development does not cater, at this time of period and municipality, for a numerous socio-economic requirements and is therefore less favourable than the preferred alternative. Furthermore, other section of Rafina-Pikermi municipality are composed of high density residential estates, closer to the city centre, which already cater for it’s housing requirements. Additionally the following drawbacks with respect to this alternative are applicable; i) This option will exclude a large number of potential wealthy buyers from purchasing property in the area, ii) Lack of diversity and vibrancy associated with a mixed-use development, iii) Lack of uniqueness, high standardization and landscape percentage usage associated with the preferred development, gaining high economic and social value.

#### *2. Light Industrial Alternative*

This alternative was instantaneously rejected as unsuited to the general functioning and land uses of the surrounding urban environment by the Greek Law represented by the Public State and the Municipality of Rafina - Pikermi.

3. *Mixed-Use Commercial and Residential Development Option*

This Option, would, besides the distance from the city center, have some advantages mentioned worthy. But it is considered that the application site is far too small to even try to develop such an ambitious project. The results would be unpredictable and the investment both economically and environmentally does not deserve the risk.

Use of Other Material Options

1. *Steel versus reinforced concrete option*

An option for the construction of the Proposed Development is steel. This type of construction seems a preferred one but there are cases that need to be examined carefully, but mainly this option was rejected for the following key reasons.

- In Greece the material -in its final for use form- is imported, and even though we know that is lower in energy consumption and natural resources use in comparison with the concrete, as a material, it will after all be less sustainable considering the transportation and installation.
- Framing with steel, in the construction phase is definitely more efficient, but still, energy have to be consumed in stabilizing the passive heating and cooling strategy, since in Greece both high and low temperatures are an usual phenomenon, while concrete can also be used as a thermal mass reducing the energy demands of the building.
- Framing with steel, does not mean that we are off reinforced concrete since the underground floors and the foundations still have to be structured with reinforced concrete, thus almost 50% of the construction.
- Socioeconomically, since that type of construction is not widely spread in Greece, special crews and technicians have to hired, apparently not from the surrounding areas resulting the loss of jobs for the locals. While, since these type of constructions are not widely spread in Greece, it should be considered, that the real estate investment predictions cannot be accurate and may result in terrible both economically and environmental risk.

2. *Timber versus reinforced concrete option*

Timber is also one of the most common structure materials in the world, but still not in Greece. The main factors that are rejecting the use of timber as a material in the Proposed Development are examined as follows.

- Timber proper materials are also an imported construction material in Greece, so the environmentally friendly argument comes to an end when considering the transportation factor, especially for these small type of needs.
- The higher mass and density of concrete construction makes it a better insulator. A home with concrete construction will retain heat or cold better than a wood-framed home, and thus energy demands will be lower.
- Wood-framed homes are vulnerable to infestations by wood-boring insects, vulnerable to fires, as well to as molds and water damage and so on. Timber solution is a more affordable option but also an investment lacking lasting qualities and the relative perceived sturdiness of the house.

Actually the best solution is somewhere in between, and the one that is already being proposed in this development. Residential constructions in Greece do use both three of the most known materials. Reinforced concrete is a mixed use material of concrete and steel, with the combination resisting both shear forces and compression forces, while timber is used in roofing, flooring and lining of the building, as a result the best characteristics of all three materials are used to produce a high quality construction.

### Alternative Composition Option

The Proposed Development has set two main parameters as in for the exploitation of each plot. Those are a 10% total cover land out of the 40% permitted by the Greek Construction Law and a less than 20% structuring coefficient permitted by the Greek Construction Law. Those parameters mean that the total building in each plot must be just under 550 sq.m and cover land in surface plot (per plot) only less than 200 sq.m. Those parameters were set after considering alternatives together with significant matter of the environmental scope.

#### *1. Horizontal Development*

This option is about developing the houses horizontally and not vertically (in four levels) but with the same total exploitation of the 500 square meters. This option could give solution or better alternatives in the construction materials used, could soften the overall skyline and change the visual parameters, could perhaps soften the influence on the ground contamination (excluding the underground floors), along with the water resources.

Unfortunately, though, the disadvantages of this option are far more significant. The land cover would dangerously be greater, with the exploitation per plot surface rising in 550 sq m. (that of 40% land cover by law permitted and the 20% structuring coefficient), destroying this way a big part of the natural territory. The construction itself, considering the slope of the plot and the total surface coverage, would require specific technical adjustments of the ground and the materials used, for the proper placement of the building and the avoidance of the development of sliding forces, blocking the proper orientation of the buildings and the options for their placement, thus blocking far more the architectural composition.

After all, this option could raise far more issues, to be considered, both environmentally and structurally (and architecturally) with indeterminate results for this investment.

#### *2. Placement Options*

This issue is not to be examined further. The placement of the buildings has been set in each plot of the down slope in the higher place, and in each plot of the up slope in the lower place. This way, the construction would be developed just next to the provincial road avoiding as much as possible the outspread of the worksite in the plot and the natural terrain.

Also, this way the architectural composition can reach high quality standards, setting each building in a far distance from the other and setting clear view point parameters, adding value to all properties.

### **Identification of significant matters**

The issues considered appropriate for assessment are set out below. It is considered that the proposed development has the potential to give rise to significant environmental effects in these areas and this hierarchy:

- Group Conditions and Contamination
- Water Resources and Flood Risk, Hydrology and Drainage
- Ecology
- Transport and Accessibility
- Noise and Vibration
- Air Quality
- Archaeology and Cultural Heritage
- Townscape, Visual and Built Heritage
- Socio Economics
- Cumulative Impacts

While some non-significant issues are mentioned and why are considered to not raising potential environmental effects:

- Waste
- Light Pollution
- Daylight, Sunlight and Overshadowing
- Wind

A landscape character analysis will be undertaken which will involve establishing the nature of the landscape character that currently forms the application site, as well as identifying the character of adjacent areas. This analysis will assist in demonstrating the potential on-site and off-site effects of the proposed development upon the character of the landscape.

Along with the above analysis an estimation of the magnitude of the populations to be affected, and the detailed identification of those populations will take place. The human population estimated to be affected from the environmental factors is approximately 100 people (approximately 25 neighbouring homes), while the indirect socio-economic affects will definitely concern a lot more. The fauna estimated to be affected are birds (e.g. Pliorgrus Pendelici, Phasianous Archaiaci), mammals (e.g. Sciuroid, Rodents, Deer, Cattle) and reptiles (e.g. Testudinal, Squamate).

### ***Ground Conditions and Contamination***

Geological maps, indicate for the Site, fluvial-lacustrine sediments, of upper Miocene and lower Pliocene constituted of marl, travertines, marly limestones and clays in alternation with conglomerates, supernatants of the above clastic sediments. The climatic conditions that prevailed during the deposition of the fluvial-lacustrine sediments, favoured the creation of lignite deposits. Historical maps show the Site to have a long history of predominantly residential development which has a very low potential for ground contamination. There are no surface water on the site.

### **Potential Impacts**

In consideration of the above, potential ground condition and contamination impacts to be addressed, will include:

- Potential risks to groundwater and surface water resources from the release of any existing contamination and new sources of accidental contamination during the construction works including the creation of new pollution pathways
- The appropriate management of any contaminated soils or hazardous materials that require treatment or removal from the Site.
- Impacts upon buried concrete and underground infrastructure.

### **Approach and Methodology**

In order to assess the potential impacts identified above, a qualitative risk assessment should be undertaken for the Site. This will determine the baseline conditions at the Site and derive a Site Conceptual Model. This will relate to historical Site uses and anticipated ground conditions to the development, thereby assessing potential contamination risks associated with the demolition and construction works of the development and on completion of the development using a source, pathway, receptor approach advocated in Environment Agency guidance.

Consultation will be carried out with the Public State and the Environment Agency. Where necessary, measure should be recommended to mitigate any adverse impacts identified such as the formulation of procedures for the appropriate handling, licensing and management

of contaminated and hazardous materials that are to be treated or removed from Site and a brief outline of remediation measures.

### ***Water Resources and flood risk***

The nearest natural surface water feature to the site is the Kolpos Petalion of the Aegean Sea located approximately 7 km eastward of the site, where the Rafina harbor operates. The site is located within a low risk of flooding according to the Environment Agency, due to its altitude and location, next to the mount Pentelicus.

### Potential Impacts

Potential impacts to be addressed include:

- Impacts on surface water drainage run-off and the potential risks associated with surface water flooding.
- Potential flooding from groundwater, sewer surcharging and overland flow.
- Impacts of below ground.

The development would generate greater flows of wastewater and so there is the potential for impacts on foul water drainage capacity. The scale of the development would also result in an increased demand for potable water in the location.

### Approach and Methodology

Appropriate design measures will be included in the development to reduce this risk where appropriate. It will also be considered how the development would balance surface water runoff from the Site to runoff rates required by the Environmental Agency and will set out how this could be achieved. It will also consider the necessity of sustainable drainage techniques. The development will also seek consultation in relation to potable water supply and sewage treatment capacity in order to assess the impact of the demand increase.

### ***Ecology***

The Site does not comprise any statutory or non-statutory sites designated for their nature conservation value. A survey was undertaken recently, to identify habitats and the potential for protected species within the Site. The site comprises mainly buildings and associated landscaping. Due to the nature of these habitats and the level of disturbance they are subject to, the habitats are considered to be of negligible value for wildlife. It is also considered that the habitats are unsuitable for any protected species. However, trees and shrubs do provide some, albeit limited, opportunities for breeding and foraging birds. The site therefore presents an opportunity for ecological enhancement.

### Potential Impacts

Potential ecological impacts of the development may include:

- The loss and/or disturbance of nesting habitat (such as trees and shrubs) for common breeding birds during the site clearance, demolition and construction phase.
- The long term change in habitat value in the Site as a result of ecological enhancement following development.

### Approach and Methodology

A qualitative assessment will be undertaken to assess the significance of impacts of the proposed development on the ecology of the site. The significance of the impacts will be determined by professional judgment and in accordance with objective criteria. Consultation

with the Public State will be undertaken and, if necessary, a strategy of ecological impacts will be developed.

### ***Accessibility***

The central businesses of Rafina-Pikermi are situated in close proximity to the subject property. A Taxi rank is also located within walking distance from the subject, which makes it easily accessible via the existing municipal road map. Due to the nature of the predominantly unoccupied Site the transport demands is likely to result in changes to the use of traffic and transport infrastructure. In consideration of the above, key transport and access issues relate to:

- Traffic flows, volumes and routes associated with the construction works.
- Local road network capacity
- Pedestrian facilities
- Parking facilities
- Safety

### **Potential Impacts**

- The following potential transportation and access related impacts are likely to be addressed in the environmental impact assessment.
- Temporary disruption to pedestrians, cyclists and road vehicle users during the construction works.
- Temporary generation of heavy goods vehicles (HGVs) during the construction works
- Impacts upon public transport capacity and accessibility
- Impacts upon pedestrian and cycle journeys, accessibility and facilities
- Impacts upon parking supply and demand
- Impacts upon access and servicing arrangements of the Site

### **Approach and Methodology**

A transport assessment will be undertaken making sure that the construction works will slightly influence the Site, for example making a time schedule for the arrival of one per time heavy vehicle on the site. Pedestrian facilities will be studied in the final site plots.

### ***Noise and Vibration***

#### **Potential Impacts**

- Noise and/or vibration impacts during the various stages and phases of the construction works
- Interim noise and/of vibration impacts to future resident of the development, should one phase of the development come in to operation prior to the completion of the entire project.
- Noise and vibration impacts to existing and future residents in the area from vehicle movements generated during the construction of the development and once completed and operational

#### **Approach and Methodology**

- The noise and vibration assessment will incorporate the following:
- Identification of existing and future potentially sensitive noise and vibration receptors within and surrounding the Site
- Prediction of noise and vibration levels generated during the proposed demolition and construction works in accordance with the relevant Laws and Codes.
- Assessment of noise generated by road traffic



### ***Air quality***

It is anticipated that there could be the potential for air quality issues associated with the demolition and construction works. This would be in relation to a temporary increase in HGVs on the local network and the potential for dust generation via physical demolition and construction processes. As the completed and operational development could result in traffic generation, the proposed development has the potential to affect local air quality. Consequently, the impact of traffic-derived air pollutants associated with the operation of the development will be assessed.

### **Potential Impacts**

Potential impacts on local air quality to be mentioned are as follows:

- Effects on sensitive receptors of dust emissions during demolition and construction activities
- Short-term localized increases in traffic borne emission during the demolition and construction works and as a result of any temporary construction related vehicles operating on the site, and/or local road network and construction car park arrangements.

### **Approach and Methodology**

An assessment of air quality that will comprise the following:

- Consultation with the City Council to agree the scope of assessment
- A review of baseline conditions through a review of the City Council's air quality review document and data from the monitoring network.
- A 3-month NO<sub>2</sub> monitoring study, using diffusion tubes, to inform, the air quality assessment, and complement the current air pollutant monitoring, to inform the baseline conditions at the Site and validate the air quality model. (The proposed locations of the diffusion tubes would be agreed with the City Council).
- A qualitative assessment of air quality impacts during demolition and construction work.
- The formulation of proposals for controlling dust and other emissions during the construction activities.
- Identification of mitigation measures to protect future resident of the Site from air pollutants.

### ***Archaeology and Cultural Heritage***

Some heritage features have been identified on the site, however no valuable heritage areas, including graves, were found to occur on the proposed development site. In the event that artefacts / graves / areas of cultural significance are discovered during the construction phase, all work should be halted and a cultural heritage practitioner should be appointed to examine the site and make appropriate recommendations

The Site itself is not located within an Archaeological Priority Zone. However, an Archaeological Priority Zone is located from the other side of the mount Pentelicus, reflecting an ancient route to the Acropolis of Athens city (mount Pentelicus has been famous for its marble, which was used for the construction of the Acropolis and other buildings of ancient Athens).

The site is not known to contain any below ground archaeological remains. It is possible that unknown buried archaeology exists beneath the Site, although the ground has been significantly disturbed from previous on-site development.

### Potential Impacts

Potential impacts on archaeology primarily relate to the possibility of the disturbance, removal or destruction of archaeological deposits during construction works, particularly any bulk excavation and the construction of building foundations. It is unlikely that archaeology would be impacted once the construction of the development is completed.

### Approach and Methodology

An archaeological assessment would be completed, if necessary, in accordance with the Greek Law. The Public State will be consulted as to known archaeology and heritage in the area and this database also holds records of past archaeological investigations that will inform our understanding of the Site's archaeological potential.

A walkover survey of the Site and surrounding area to assess archaeological condition and likely impacts upon the archaeological resource would also be undertaken.

A qualitative assessment will be undertaken to assess the significance of any impacts of the proposed development on the archaeological deposits within the Site. The significance of the impacts will be determined by professional judgment and in accordance with objective criteria. Consultation with the relevant ministry will be undertaken and, if necessary, a strategy for mitigation of archaeological impacts would be developed.

### ***Townscape, Visual and Built Heritage***

The plot lies in an inclined slope at the foot of mount Pentelicus. This is an important consideration for the design of the proposed Development, and that is why the height of the buildings is raised up until the absolute necessary while it grows according to the inclination of the ground. The site is not located within a Conservation Area.

### Potential Impacts

The change in height and massing proposed by the development has the potential to alter the existing townscape character and quality in addition to views to, through and from the Site. As such, this report addresses the following townscape impacts:

- Temporary visual intrusion during the demolition and construction works
- Changes to the character, context and quality of the Site and local townscape
- Impacts upon important but non statutory vistas and local views.

No direct impacts on buildings or structures of historic value would occur as a result of the proposed development. Potential built heritage impacts therefore don't exist.

### Approach and Methodology

A full townscape and visual assessment would be undertaken. The methodology for the assessment would follow all Guidelines set by the Greek Law.

A desk top study would be undertaken which would include a review of planning policies relating to townscape and visual issues, including strategic or locally valued view corridors where appropriate. A three-dimensional model would be created to test the theoretical visibility of the Site and inform the visual assessment. Field survey would be carried out to verify the desk based work and establish the visual envelope of the Site.

Consultation with the architectural Committee will be undertaken during the design process to ensure that their views are taken into account in the final scheme design.

Key townscape features (including trees) would be evaluated and a classification made of the sensitivity to change.

A qualitative assessment to the development proposals and their impact on the existing townscape character, visual context and built heritage would be undertaken. The nature, extent

and significance of the impacts will be determined by professional judgment and in accordance with relevant policy and guidelines, where necessary, mitigation measure would be identified.

### ***Socio Economics***

Rafina - Pikermi has been identified as regional node of importance. As such, it is a growing community with much potential for growth and job opportunities. The site is located at a prominent place and it is easily accessible for the existing road map. The local community serves high range salary jobs and an excellent market.

One key driver for the generation of the development is need to (re)develop the Site to provide an important regeneration opportunity for new homes and employment creation and even longer term socio-economic benefit to the area.

Employment opportunities would be generated during both the construction and operational phases.

The result of bringing new residential population to the Site, as well as a spending impact, this population can be expected to have an impact on demand for local services (e.g. health, education, clothing, house care, children care, car services, entertainment, etc).

### **Potential Impacts**

The proposed development is anticipated to have a range of social and economic impacts, some of which would be temporary (such as employment created during the demolition and construction works), whilst others would be long-term and permanent.

- In accordance with the key issues outlined above, the socio-economic assessment would examine the following potential impacts:
- The generation of demolition and construction related employment including opportunities for local employment and training initiatives and indirect local procurement opportunities.
- Creation of new long-term employment opportunities
- Net impacts of additional expenditure resulting from additional Site employees and residents.
- Impact of the proposed development on existing businesses
- The provision of new homes in relation to the current policy housing targets
- The contribution of the development toward achieving the social and economic objectives set out in local planning policy

### **Approach and Methodology**

Professionals would undertake a socio-economic assessment of the development. The proposed methodology would include:

- A review of relevant social and economic policy at national, regional and local levels
- A summary of the socio-economic baseline conditions at the Site ( including population, deprivation, housing, employment and economy, schools, primary healthcare facilities) using established statistical sources, official labour market statistics etc.
- Identification and assessment of impacts, using appropriate modeling techniques where necessary. This will include:
  1. An estimation and quantification of the Full Time jobs generated be the demolitions and construction
  2. An estimation and quantification of the Full Time jobs created be the completed and operational development
  3. An estimation and quantification of the additional expenditure created be the competed and operational development.

- An appraisal of the impacts of the development additional population on existing primary healthcare facilities, schools, public facilities, etc
- Identification of appropriate mitigation measures should any adverse impacts be identified.

### ***Cumulative Impacts***

The environmental impact assessment regulations require that, in assessing the impacts of a particular development proposal, consideration is also given to the cumulative impacts. Cumulative impacts are those that result from incremental changes caused by other past, present or reasonably foreseeable activities or projects in the local area, in combination with the proposed development. Cumulative impacts can be split into two categories:

Impact interactions, which are the combination of individual impacts on a particular receptor, for example noise, dust, and visual impacts all occurring together affecting nearby local residents during the construction of a development

Cumulative impacts, which are the combination of impacts from several developments, the individually may be insignificant, but when considered together could result in a significant cumulative impact.

### **Approach and Methodology**

Impact interactions would relate predominantly to the construction phase where impacts such as construction noise and dust nuisance can occur together on nearby sensitive receptors. These will be qualitatively assessed using the findings of the individual environmental impact assessment technical studies and professional judgment.

The details of the committed schemes to be considered in the cumulative assessment will be agreed with Rafina - Pikermi Council.

Where possible, any cumulative impacts identified would be assessed quantitatively through detailed modeling. Where quantified assessment is not possible, cumulative impacts would be assessed qualitatively using the findings of the individual environmental impact assessment technical studies for the development, any available information from the identified committed developments to be considered and professional judgment.

### **Non-significant issues**

The aim of this scoping report is to focus the environmental impact assessment on those environmental issues that may be significantly affected by the development proposals. In doing so, issues may be “scoped out”, in that the potential for significant impacts has been deemed unlikely. The following section provides details of the issues that have been ‘scoped out’ of the environmental impact assessment.

### ***Waste***

Potential waste impacts could relate to the following:

- Creation of waste during the construction phase of development
- Creation of domestic (and some commercial) waste during the operation phase of development

It is likely that some waste from construction of the proposed building development would occur, however, this would be the case for any (re)development and the critical aspect is how this waste is managed.

It is considered that waste impacts should be scoped out of the environmental impact assessment because the potential waste impacts are considered to be insignificant when

considered in light of the sustainable waste management measure to be implemented according to the Greek Law.

### ***Light Pollution***

Potential light pollution impacts could relate to the following:

- Change in horizontal light spill and glare to adjacent areas around the Site
- Change in upwards light spill contributing to sky glow

It is considered that although the Site's use would intensify the following development, there is unlikely to be a significant change in light pollution impacts, it is therefore considered that light pollution impacts can be scoped out of the environmental impact assessment.

### ***Daylight, Sunlight and Overshadowing***

Changes in the mass, layout and building envelope on the Site could result in localized changes in the quality of daylight and sunlight experienced by people within and surrounding the Site, but there is unlikely to be a worth mentioning change due to the scale of the development. Potential Impacts could be considered the following:

- Changes to the quality of daylight and sunlight experienced by residents.
- The incidence and duration of overshadowing experienced by users within and near by the development.

Should also be mentioned the adjacent residential buildings where a reasonable level of daylight and sunlight is expected. It is considered by professionals undertaking daylight, sunlight, overshadowing and solar glare assessments in respect of the evolving development design, that no significant impacts will occur, accordingly with the development scale, even once the development design has been fixed, that is why it is considered that changes under daylight, sunlight and overshadowing impacts should be scoped out of the environmental impact assessment.

### ***Wind***

The insignificant change in on-Site massing associated with the development has the potential to influence the speed and direction of the wind as it moves around the new building within, around and , adjacent to the Site. Accordingly, the prevailing ground level wind environment can affect the relative 'comfort' for pedestrians utilizing the Site.

The site is currently orientated towards the prevailing south-westerly winds. Existing wind conditions on the site are acceptable for current pedestrian activities i.e. walking and standing. The potential wind changes would focus upon the following potential impacts

- The relative comfort of Site occupants and visitors on completion of the development.
- The relative comfort of pedestrians utilizing other (future) facilities bordering the Site.

Design review of the development proposals is evidence of the insignificant impacts wind will experience on the construction and completion of the development. The wind conditions are suitable for the intended pedestrian activity. Location which exceeds the comfort criteria in terms of their intended usage in relation to wind condition will be reviewed in more detail and mitigation measures will be recommended where applicable. That far it is considered that related changes should be scoped out of the environmental impact assessment.

### **Plan of study for the impact assessment**

Impact Assessment Methodology:

The generic scope of work, which will be undertaken by specialists, will include as a minimum:

- Outline the study approach and identify assumptions and sources of information.
- Establish the baseline conditions
- Briefly describe the affected environment and its sensitivity in terms of the study
- Identify and assess current and potential future impacts on the environment
- Quantify, wherever possible, the potential direct and cumulative environmental impacts and rate the significance of potential impacts (see below)
- Recommend appropriate mitigation and/or management measures that would result in reducing negative impacts to negligible or low significance levels, and enhancing positive impacts

The impact assessment will be done according to the following methodology:

- Direction of an impact may be positive, neutral or negative with respect to the particular impact.
- Magnitude is a measure of the degree of change in a measurement of analysis, and is classified as none/negligible, low, moderate or high.
- Scale/Geographic extent refers to the area that could be affected by impact and is classified as site, local, regional, national or international.
- Duration refers to the length of time over which an environmental impact may occur, i.e. transient, short-term, medium term, long-term or permanent.
- Reversibility is an indicator of the potential for recovery of the endpoint from the impact.
- Frequency describes how often the impact may occur within a given time period and is classified as low, medium or high frequency.
- Probability of occurrence is a description of the probability of the impact actually occurring as improbable, low probability, medium or highly probable and definite.
- Impact significance is a rated degree, developed by specialists using the following scoring system (Table 1).

*Table 1 Scoring system for assessment of significance*

Scoring system for assessment of significance:			
SP (significance points) = (magnitude + duration + scale) x probability			
Magnitude	Duration	Scale	Probability
10 very high / don't know	5 permanent	5 International	5 Definite/don't know
8 high	4 long-term	4 National	4 Highly probable
6 moderate	3 medium term	3 Regional	3 Medium probability
4 low	2 short term	2 Local	2 Low probability
2 minor	1 transient	1 Site only	1 Improbable
1 none			0 None

Maximum SP is 100 points  
 SP > 71 High environmental significance  
 SP 41 to 70 Moderate environmental significance  
 SP < 40 Low environmental significance

The findings of the specialist assessments will be summarized for inclusion in the environmental impact assessment report and the full reports will accompany the environmental impact assessment as appendices. The recommendation for environmental management and mitigation measures will be compiled into an environmental plan that will be included. The reports will conform to the requirements of the relative regulations of the Greek Law.

A period of at least 2 weeks will be available for public review of the environmental impact assessment. The public review period will be announced in advance by way of a progress feedback letter that will be distributed by the municipality of Pikermi - Rafina.

It is believed that the methodology that is being used to assess the current state of the environment will be sufficient to identify potential impacts. The data will assist in the

complication of the environmental impact assessment as an instrument in the decision making process. Mitigation measures for the impacts identified in the scoping report will be described in detail in the environmental impact assessment.

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## Appendix

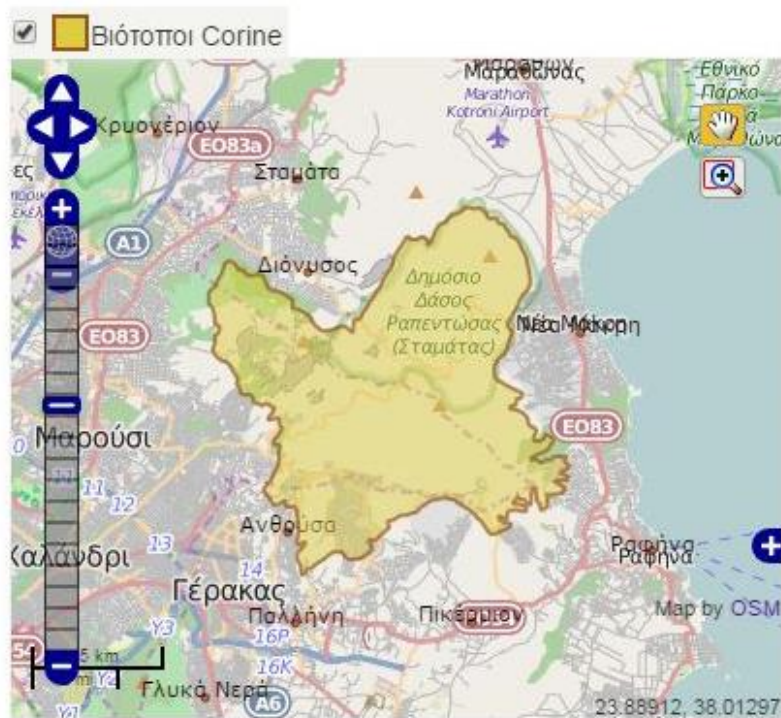


Figure 1 Zoning of the Mount Pentelicos

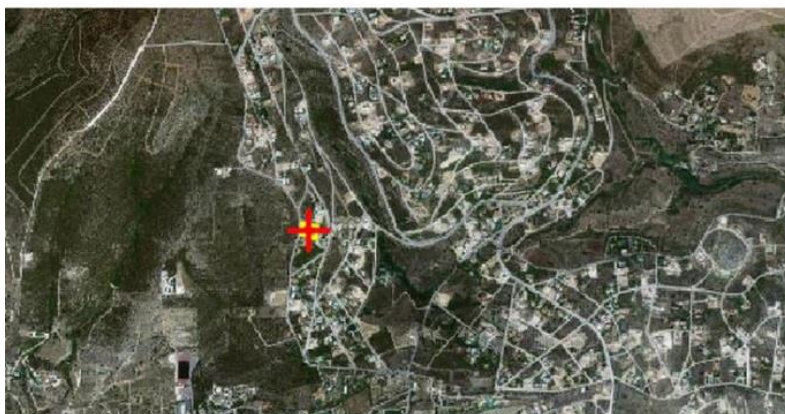


Figure 2 Location of the proposed development



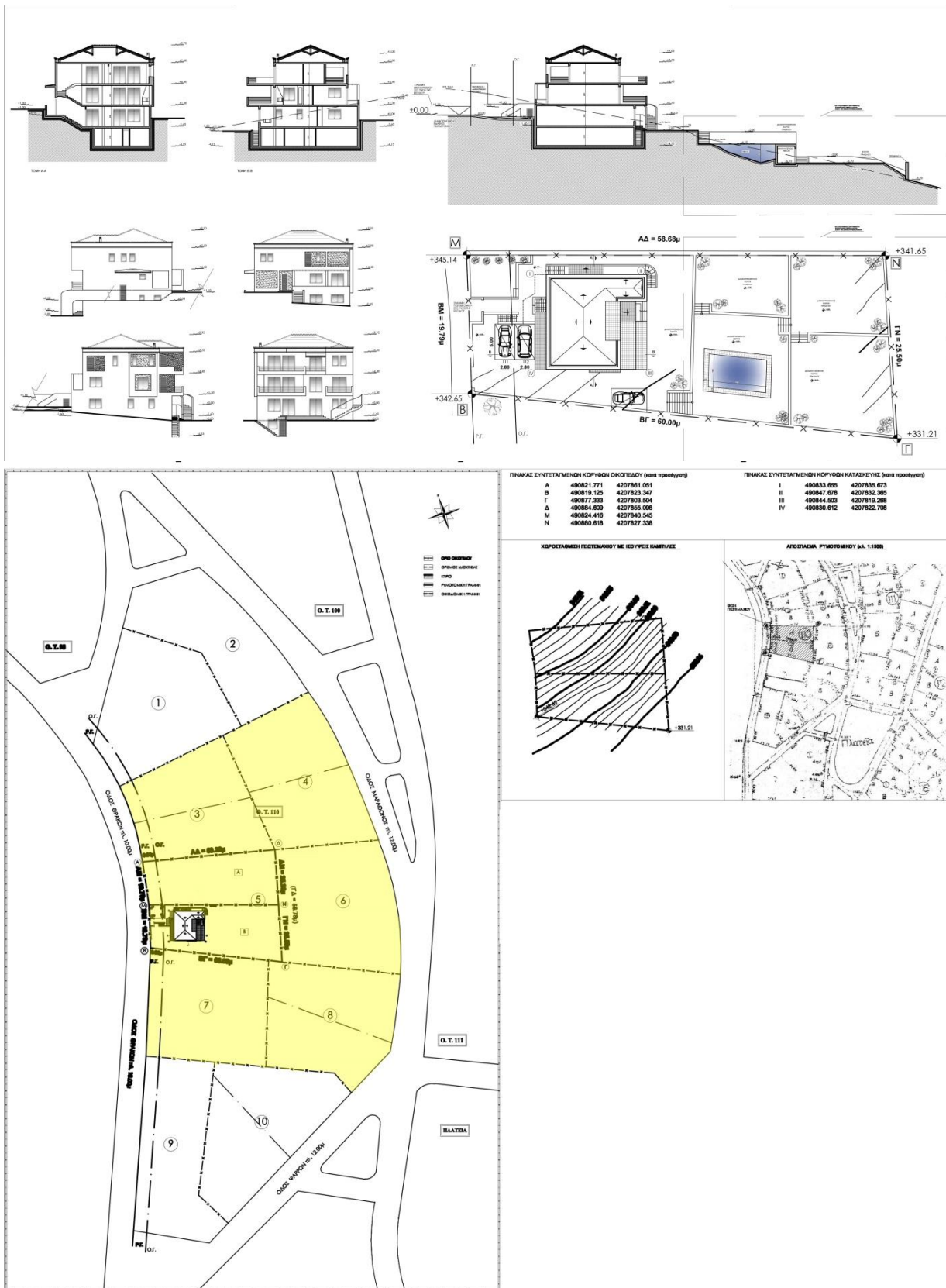


Figure 3 Drawings of the proposed development