CONSORCI URBANÍSTIC DEL CENTRE DIRECCIONAL
DE CERDANYOLA DEL VALLÈS
Passeig d'Horta 66-68
08290 CERDANYOLA DEL VALLÈS (VALLÈS OCCIDENTAL)

FAO: Sr. PERE SOLÀ i BUSQUETS

Subject: *As built* for the landscape remediation and restoration construction project for the area designated "Àrids Catalunya", Cerdanyola del Vallès.

Inf. File: 07/2069, SC-427/2

Dear Sir,

Attached is the technical report dated 15th October 2012, made by the Agència de Residus de Catalunya (hereinafter ARC - the Catalan Waste Management Agency), regarding the evaluation and assessment of the work carried out on the landscape restoration for the area designated "Àrids Catalunya". We would also like to inform you that we consider the actions of the Agency completed regarding this clay pit, considering that the finished works have been adjusted to the project and wish to recommended you evaluate the observations described in the point of proposals for actions of said report.

We are at your disposal regarding any questions that may arise at the Departament de Gestió i Sòls Contaminats (Department of Management and Polluted Land) of the Catalan Waste Management Agency.

Yours sincerely,

Industrial Area Director

Ramon Oliva i Tarré

Barcelona, 16th October 2012

Technical report on the evaluation and assessment of the work carried out on the landscape restoration (green corridor) for the area designated "Àrids Catalunya", within the framework of information file No. 07/2069, SC-427/2	
Description: *As built* for the landscape remediation and restoration construction project for the area designated "Àrids Catalunya" partial Plan by the Centre Direccional de Cerdanyola del Vallès	
City: Cerdanyola del Vallès	**Date: 15/10/12**

1. BACKGROUND

On 15th February 2010, the ARC (the Catalan Waste Management Agency) sent (RS3581) the technical report for the "*Approval of the Landscape Restoration Project for the area designated "Àrids Catalunya" for the Consorci Urbanístic del Centre Direccional de Cerdanyola Del Vallès*", to the Consorci Urbanístic del Centre Direccional de Cerdanyola Del Vallès (hereinafter the Consortium). This report closed information file No. 07/2069, SC-427/2, and instructed the Consortium that once the morphological and landscape restoration works of the "Àrids Catalunya" area were executed, they would inform the ARC with respect to the part of the *As built* area, where the surface was identified as being affected by the presence of asbestos, and delimiting it with UTM coordinates and if deemed necessary with markers, describe the actions carried out corresponding to the waterproofing layer, as well as the results of soil analyses (where the compounds are characterised by RD 9/2005, metals and asbestos) which remain on the surface once the restoration works have been completed.

It was also proposed that the scope of Environmental Protection should be reflected in the Planning for this area in order to protect the work carried out.

On 2nd August 2012, the Consortium sent (RE30264) the ARC the document entitled, "*As built of the Urbanisation and Remediation Project for the area designated "Àrids Catalunya" located on the left bank of the torrent del Bosc to the partial Plan of the Centre Direccional de Cerdanyola Del Vallès"*, dated February 2012, and prepared by TECNOMA.

On 8th October 2012, a technical visit was made to the Àrids Catalunya site by representatives of the Consortium along with ARC technicians to observe the restoration work carried out on the land.

2. REVIEW OF THE DOCUMENTATION PRESENTED

The *As built* of the Project executed, dated February 2012, details the actions carried out for the urbanisation and remediation of the scope of action of the Àrids Catalunya clay pit as a green corridor destined for an interurban green area.

This document describes in detail the work carried out according to the approved technical prescriptions and which correspond to the earth removal and the carrying out of the waterproofing layer of the clay pit with a single type of clay (with a permeability of $k=10^{-9}$ m/s and 30 cm thick). These areas have a soil layer of one meter, the last upper layers being 30 cm of vegetated land and one and a half meters in the wooded area. The area contaminated with asbestos has been modernised and completed on the surface making a cordon with an identification tape, covering the area with at least one meter of land and an access road has been built to the upper part of the urbanisation where there is a viewpoint. Attached is a plan showing the final situation of this urbanisation with the road and the different revegetation units, and a second plan using UTM coordinates to indicate the area of the clay pit where the asbestos waste is confined.

To adapt the morphology and topography of the land to the final project of this clay pit, the remediation and restoration of the site were carried out with soil from the same land, and clays with a permeability of 10^{-9} m/s and topsoil from other areas of the Centre Direccional. To form the top layers, the prescriptions and the protocol established in the Working Plan were followed. Land drainage is carried out naturally by the slope given to the land, channelling the surface runoff water by means of a ditch and evacuating it from the site at the lowest point by a corrugated HDPE drainpipe to the torrent del Bosc.

Once the earth removal works were completed and before laying the 0.3 m layer of topsoil, 20 soil samples were taken (19 from the land area and 1 from the soils brought in) to determine the quality of the remaining soil. The analytical package was to determine the RD 9/2005 metals and asbestos compounds. The analytical results determined a localised affected area in sample M4 slightly above the generic reference levels for organochlorines, PAHs, PCV, and above the reference value for TPH (4,700 mg/kg), sample M19 for acetone (11 mg/kg), sample M14 for Barium (3,500 mg/kg), and M16 for Selenium (4.2 mg/kg).

As the above compounds were detected above NGR in the site soil, given that the use of the site is a green area intended for interurban public parks, and in accordance with RD 9/2005, it was assessed as a human health risk (AQR) using the RBCA Tool Kit program v.2.5.

– The following scenarios are evaluated:

Scenario	Receivers	Exposure method	Exposure
On-Site	Green area users (children)	Inhalation of vapours in outdoor areas – soils and waters	6 years – 210 d/year
On-Site	Industrial workers in the area	Inhalation of vapours in enclosed areas – soils and waters	25 years – 250 d/year

This does not take into account direct contact with the soil (ingestion or skin contact) or inhalation of particles in outdoor areas for the presence of the 0.3 m of topsoil, or inhalation of VOC in indoor areas, as no buildings are found on the land.

- Regarding the focal point of pollution:
  - Maximum concentrations are contemplated which were obtained from both remaining soil and groundwater samples from the operations carried out from February 2010 to October 2011 which exceeded the intervention levels of RD140/2003, the values described by Dutch regulations or by the ACA of the QUASAR project.
  - It assumes that land affected typified by sandy silts, with a surface area of 45,000 m^2, and it assumes the groundwater affected to be at a depth of 0.91 m.
- Regarding building parameters, the values of the RBCA program were used by default.
- As for the transport mechanisms, the Johnson & Ettinger model for the volatilisation of pollutants from the subsoil and the ASTM model were considered.

From these data and hypotheses, the results indicate that the risk to human health (children and workers) is acceptable.

Scenario	Receivers	Exposure method	Cancer Risk	Toxicity Risk
On-Site	Green area users (children)	Inhalation of vapours in outdoor areas – soils and waters	1.8E-7	2.9E-1
On-Site	Industrial workers in the area	Inhalation of vapours in enclosed areas – soils and waters	4.8 – 12	–

According to the documentation provided, the work carried out has been executed in accordance with the approved project without detecting incidents that required modification to the same. A copy of the final work certificate signed by the Management of the work is attached, as well as a copy of the certificate of reception for the work signed by the Consortium and the Cerdanyola City Council.

On the other hand, during the technical visit to the site on 08/10/12, the restauration and final morphology of the land could be seen, and the good work done to the urbanisation and the revegetation of the clay pit. It should be noted that the recommendation made by the ARC to identify the area where asbestos waste is confined with markers on the ground had not been taken into account. According to the comments made by the representatives of the Consortium, it was deemed unnecessary to install them as they did not see them as functional, nor lasting over time and, also, as they plan to put this land into agricultural production (to grow cereals), it could lead to an added difficulty in carrying out the field work that could be done on the land in production. Entering into production on this land will depend on the prior addition (on the areas confining the asbestos waste, sealing and the restoration of the

clay pit) of 1 more meter of topsoil from other areas of the Centre Direccional, ensuring that the use of a plough may not damage the confinement layer of the restoration carried out.

3. EVALUATION OF THE DOCUMENTATION SUBMITTED AND ACTION PROPOSALS

The documentation submitted by the Consorci Urbanístic del Centre Direccional designated "*As built of the Urbanisation and Remediation Project for the area designated "Àrids Catalunya" located on the left bank of the torrent del Bosc to the partial Plan of the Centre Direccional de Cerdanyola Del Vallès"* dated February 2012 and prepared by TECNOMA, is in answer to the request of the ARC, dated 15/02/10, which approved the restoration project for the area of "Àrids Catalunya", we communicated the closing of information file 07/2069 SC-427/2, and the aforementioned document was required.

This document reflects and details the works carried out according to the approved project, identifies the confinement surface affected by the presence of asbestos by UTM coordinates, and incorporates the results of the soil analyses (with the prior addition of the finishing topsoil layer of 0.3 m) that remained on the surface once the restoration works were finished, as well as the results of a risk analysis as some samples presented compounds above the reference values.

The content of the information presented is valued appropriately in terms of the scope and methodology used for both the nature of the soil and for the risk analysis carried out. The work carried out by nature of the remaining soil is valued as sufficient (number, location and points of prospection, laboratory analyses, etc.).

The risk analysis was made under conservative estimates. The results indicate that the risk to human health is acceptable for the use as a green area for the land. The conservative approach used, and uncertainty analysis indicate that the risk is not being underestimated.

In the official process document, the Consortium foresees to incorporate and reflect this area of Environmental Protection in the Planning and/or in the land registry, so that in the future no works are carried out that could damage the waterproofing layer built.

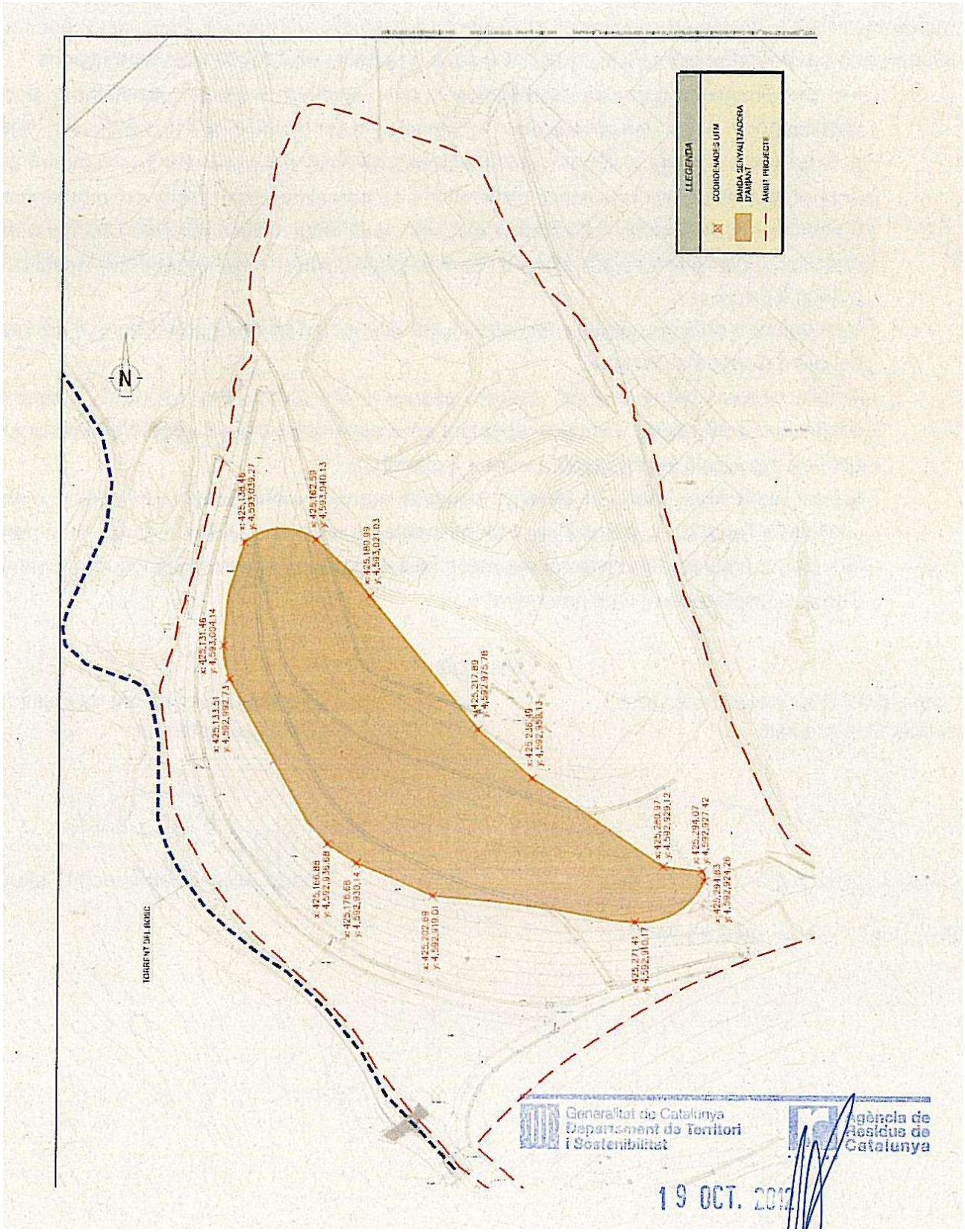
During the technical visit to the site, it was observed *in situ* that the area of asbestos waste confinement mostly coincides with the right side of the road leading up to the viewpoint, except for a triangular area located on the left side which has been revegetated with a layer of trees. Given that the Consortium has deemed it unnecessary to place markers on the land to limit the area of asbestos waste confinement, and wants to recondition a large part of the area of action carried out at "Àrids Catalunya" to put the land to agricultural use (for the purpose of maintaining the area), the undersigned technicians, with the aim of protecting the work carried out and waterproofing layer, propose that the following recommendations are incorporated in the Plan and/or land registry, and as such, this to be communicated to the Consorci Urbanístic del Centre Direccional:

- Not to prepare the area of asbestos waste confinement delimited by the UTM coordinates (see Annex 1 Plan 1) for it to be put to agricultural use, corresponding to the right side of the road, easily identifiable at present and with a steeper slope than that of the rest of the land. The maintenance work on this area of land can also be carried out without the need of agricultural machinery to cultivate the land. To assess whether it is necessary to provide topsoil to reach a depth of 50 cm.
- Maintenance of the perimeter drains and the 2 ditches for this platform on the right side of the access road to the viewpoint.
- To extend the triangular area of the left side of the road corresponding to the area of asbestos waste confinement, repopulating it with tree species so it cannot be used for agricultural use (see Annex 1 Plan 2).
- Mark out the area of asbestos waste confinement completed in 2012, so that it is identifiable in the future. According to the comments made by the Consortium members, these markers could be trees around the perimeter.

Approved by

Tècnic del Departament de Gestió i Sols Contaminants (Technician for the Department of Management and Polluted Land)	Cap del Departament de Gestió i Sols Contaminants (Head of the Department of Management and Polluted Land)
Sergi Latres i Simó	Josep Antoni Domènech i Paituví

ANNEX 1. Plan 1. Area for asbestos waste confinement with UTM coordinates:



ANNEX 1. Plan 2. Proposal for repopulating the area of asbestos waste confinement for non-agricultural use.