Environmental Report 2011

The Environmental Management System

At FCC CONSTRUCCION the Environmental Management System is based on the identification of environmental aspects most commonly found in our works.

To facilitate their identification and implementation, aspects and actions are classified into a number of groups. Criteria have been developed for the evaluation of the impact of each environmental aspect on a given project, in terms of magnitude and importance; as a result, the significance of every aspect is rated as part of the integrated planning process that takes place at the start of each.

Once the environmental aspects have been selected, their potential impact has been evaluated and the significant environmental aspects have been identified for each location, the actions on site are planned homogeneously throughout the organization.

FCC CONSTRUCCIÓN has implemented a system of Good Practices that calls for actions, which adds to the requirements established by law, contract or otherwise, a group of actions aimed to guarantee the best possible real improvement in environmental performances.

To minimize impacts at the planning stage, the works identify which environmental aspects are present, and evaluate their significance depending on the magnitude or the amount of pollution or disturbance, and the importance and sensitivity of the area impacted.

The chart on this page summarizes the environmental aspects identified at the works evaluated in 2010, such aspects being either real or potential, and they who are significant after evaluation:

ASPECTS	Works with environmental aspects (%)			Works with significant aspects (%)		
	ED	OC	TOTAL	ED	OC	TOTAL
Waste production	100%	100%	100%	58%	72%	65%
Regional Planning	94%	92%	93%	42%	71%	56%
Atmospheric emissions	99%	100%	100%	27%	67%	46%
Use of natural resources	96%	99%	98%	25%	68%	45%
Environmental accidents	99%	96%	98%	32%	47%	40%
Noise and vibrations	98%	100%	99%	29%	43%	36%
Water discharges	94%	97%	95%	14%	39%	26%
Use, contamination or loss of soils	89%	99%	94%	2%	32%	16%
Occupation of rivers- or seabed and water collection	2%	64%	32%	0%	32%	15%
Emission of radiation: use of radioactive sources	6%	40%	22%	0%	0%	0%

GENERAL DATA	ED	OC	TOTAL
Media of the data identified at the Works	43	62	52
Media of the significant aspects identified in each works	4 (10%)	15 (25%)	10 (18%)

ED: Edification / **OC:** Civil Works

There is a catalogue of Good Practices that can be selected by projects and applied as and where applicable.

These Good Practices are weighted by their importance; that is, higher value is assigned to those that result in a greater benefit for the environment, as well as those that are intrinsically better and those that are new or involve a greater effort for the works, in terms of investment or research, management or talent.

The real actual scope of the Good Practice is also valuated, so as a greater implementation, a wider generalization of the action taken, a higher number of interventions, or, all in all, a further scope of the Good Practice mean a better score.

All the works can select the Good Practices they consider to be most appropriate or applicable depending on their activities; thus obviating the difficulty posed by the huge diversity of project types (which prevents blanket application of a given practice).

The target Good Practices are evaluated on the basis of a standardized quantification these parameters:

- Importance: It indicates the importance of the Good Practice, assigning a higher value (3) when the importance of the means by or the difficulty of carrying it into effect is higher, and a minimum value (1), when lower.

- Target: It indicates its progress, assigning a higher value (3) when the implementation is more generalized or the best technologies are used, and a minimum value (1) when the implementation is lower.

The results of the degree of implementation obtained, given to the importance of good practice in internally demanded, provide a score, which is a true indicator of environmental performance and effort in the implementation of good practices at the worksites. The target now is to achieve a total of 57 points in all our works.

Good Practices proposed within the following environmental areas are:

- Relationship with society (Training / attitude of people, communication and awareness)
- Atmospheric emissions
- Noise and vibrations
- Water discharges
- Use, contamination or loss of soils
- Use of natural resources
- Waste production
- Regional Planning

Application software manages the Environmental Plan at the company's worksites and other locations, and guarantees the reliability and availability of the data by:

- Identifying the environmental aspects through a checklist in which those stages of the works that can affect the environment are selected; it valuates their importance in order to reinforce those most significant.

- Selecting the environmental legislation to be applied for each aspect.

- Preparing a program of performances that gives compliance with legal requirements and others.

- Tracking the waste production at worksites, by using the Waste Management Record Sheet.

- Assisting the planning, monitoring and control of Environmental Practices deployed at the worksites.

The information generated at the worksites, and used by the works for environmental management, enters in a database that provides a snapshot of the company's environmental performance while guiding improvement actions and enabling disclosure to society.

A demanding system of internal audits and the inner controls within the different integration processes, validate the accuracy of the data.

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Chairman's statement

In exceptional situations, we find exceptional qualities. On a planet that is changing ever more rapidly, calm action and the stability of strong, guaranteed values provide the security needed to face up to the new and varied challenges that we have to confront every day. The continuation and worsening of the financial crisis, the Arab Spring and other geopolitical uncertainties, social activist demonstrations and a world in accelerated change demonstrate FCC CONSTRUCCION's great strength and ability to respond.

"The environment is not a passing fad, nor is it a separate issue or something which we can forget about"

The European Commission defines Corporate Social Responsibility as responsibility relating to our impacts on society, and this has been and remains our approach to strategy and positioning within our sphere of action. In this report, I am very pleased to present you with the advancements and the results from this overall perspective, within the scope of the environment, and how the system has evolved to become more global and comprehensive, incorporating new scopes and actions.

The calling to serve the public and shareholders, our responsibilities to our employees and suppliers and our consideration for the stakeholders and communities affected makes us conscious of the value of our grand gestures and small details, with a refined sensitivity to the crisis.

Our unique ability to successfully address new challenges, while also dealing with the small things, allows us to come out strengthened from a situation in which each threat is a new opportunity. Nothing can be done now as before. Change is survival. However, in a different way, we still have to be profitable, dealing with people and looking after our environment.

The environment is not a passing fad, nor is it a separate issue or something which we can forget about. Just the opposite: at times of upheaval and relocation, when there is a risk that what is urgent is dealt with at the expense of what is important, we believe it is necessary to take further steps in our environmental management. That's why this year we have also verified our declaration of greenhouse gas emissions pursuant to the international standard ISO 14064 and the ENCORD protocol, which makes us the first construction company to obtain this verification.

We know the boundaries of the possible – boundaries which change with the new technologies - we manage risks and uncertainties, and in addition to solving problems, we generate opportunities because the only way to be prepared for the future is to have knowledge of it, and the only way to predict it is to create it. We face a scenario which will demand responses from our responsibilities to the company, society and environment. We are capable of providing them.

President of FCC CONSTRUCCION

Introduction

Purpose of the document

At FCC CONSTRUCCION we continue in our commitment to sustainability, especially during times of economic slowdown, which compels us to consider our business systematically in its three different strands: environmental, social and economic.

This Environmental Report, the seventh since its regular publication began, combines these three dimensions, involving society in our environmental management and in improving the eco-efficiency of the construction processes.

"One of the greatest achievements of this last period was the improvement of the environmental data collection and analysis system"

One of the greatest achievements of this last period was the improvement of the environmental data collection and analysis system; we have designed new tools and adapted existing ones, so that we are able to have information available, in real time, of all our worksites, generating reports at different levels: by type of project, geographical location, hierarchical structure or type of client. As shown, the Environmental Report data that you have in your hands corresponds to all the projects in progress throughout 2010, but also to data corresponding to projects carried out in each Autonomous Community (www.fccco.es).

Another objective achieved responds to the FCC CONSTRUCCION's commitment to climate change. In this line, we have designed and implemented a Greenhouse Gas measurement protocol and become the first Spanish construction company to verify the GHGs report downloadable in www.fccco.es

Furthermore, we continue to systematise sustainability through the implementation of voluntary Good Environmental Practices at all our worksites. These actions, which go beyond the legislative requirements and result in an environmental improvement, are clear examples of eco-efficient management: each worksite selects those actions which, being easy to apply, generate more environmental, but also social and economic benefits.

In the seventh edition of our now traditional Environmental Report, the first Greenhouse Gas Emissions Report issued by FCC Construccion (2011) has been added, which means an step forward in the improvement of the information quality made available to our stakeholders.

Climate change

Information quality

Sustainable construction

Good Environmental Practices

Challenges and objectives from which the company has developed its working principles over the last two years.

The role of FCC in sustainable construction

One of the important challenges in our sector, especially in the current situation, is the definition and implementation of sustainable construction. We understand that sustainable construction can be developed, starting from the present situation of construction sector, through the improvement of traditional Good Practices and through the consideration of the different alternatives during all phases of the life cycle, in order to select, eventually, the most profitable ones from all points of view: environmental, social and economic.

Over 100 years building infrastructure sustainable

At FCC Construction we are aware that one of the services we must make available to Society is our commitment to provide solutions, share experiences and knowledge and contribute to define guidelines and standards that guarantee the best results and avoid errors made in the past.

A more sustainable and environmentally friendly construction is accomplished only by following clear guidelines in which we, the builders, play active roles, suggesting possibilities, involving ourselves in the process and providing solutions and perspectives from our area of activity. For this reason, one of the FCC Construction's strongest commitments is its active participation in multiple working committees for developing these standards needed for sustainable construction, highlighting its leadership role within the international arena, both for ISO and CEN, in establishing the basis, definition and intelligence of sustainability within the framework of the infrastructures and civil works.

In the annex some of the most relevant organisations in which FCC has played a significant role, defining and establishing the basis for considering sustainability in the usual framework during construction, are described.

The role of FCC CONSTRUCCION is not just participating in working groups related to sustainable construction, but,

(Annex: Charts No. 1 and 2, page 60)

because we are conscious of the circumstances around us, we share as well our experience and knowledge acquired in other environmental areas of responsibility, social responsibility, technological innovation or hydraulic planning.

Obviously it means extra work during the execution of our works, but it is our responsibility to share what we learn and provide our opinion to all actors involved, in order to generate knowledge that will set the future guidelines to be followed. And it is not a so distant future since energy assessment for buildings is currently being demanded from the project stage, and standards relating to the environmental declaration for construction products and assessment of the sustainability of buildings have already been published. Furthermore, the new GRI sector supplement for Construction and Real Estate includes an indicator based mainly on the CO2 measurement protocol developed by ENCORD, and the international standard on sustainability indicators for civil engineering works will be issued in 2013.

We have participated in the beginning of all these trends and standards, we have worked in their development and we have learned along the way, and now we start to reap the results of the work performed, which strengthens our position: we must be there; it is our commitment, our responsibility and our conviction.

Environmental performance

Main figures as indicators

The necessary inclusion of the impact that the construction activity may have on the environment within a wider global framework - in which economic, social and productive aspects are also considered - has been one of the key considerations for FCC CONSTRUCCION at the time of organising the Management and Sustainability System, which supports all our works.

It is for this reason, through this System and its different computer applications, that we are able to obtain real time comprehensive information from our worksites; information which we translate into generally quantitative indicators in order to simplify and communicate the complex reality of each one of the works in a simple way, including trends and progress made over time.

"We have works, sustainability and environmental indicators systems which have become our best management tool for analysing trends"

We have works, sustainability and environmental indicators systems which have become our best management tool for analysing trends, assessing performances and integrating the different dimensions of sustainability in the decision-making process.

Each worksite issue a report which display the most representative values of the activities performed. All this data, updated at least every four months, is integrated at company level in order to obtain the average values of the worksites activity. The advantage of having a developed, indicator-based information system is that we can report our environmental performance at different scale levels, both geographical and temporal, and adapt the environmental information to the interest group requesting it.

In particular, in this section we will show the average values for building and civil engineering works, as well as for the company as a whole, taking the works executed over 2010 fiscal year into consideration in the three cases

The system of environmental indicators, fed from information provided by all the company's fixed locations and worksites, translates our interaction with the environment into quantitative values, and assesses their magnitude and importance.

The following charts list the average data for the year 2010:

IInteraction with the environment

INDICATORS	MEAN VALUES 2010	% VALUE
Distance to the nearest population (m)	717 1,112 365	97% 96% 98%
Distance to essential community services such as the fire services, hospitals, schools, airports, power stations, telephones (x 10m)	350 419 271	69% 78% 62%
Distance to housing or industrial activity (m)	539 795 321	78% 76% 81%
Distance to authorised non-hazardous or inert landfill (km)	15 12 17	97% 95% 98%
Distance to water masses (x 10 m)	270 149 374	88% 85% 90%
Channel length affected by diversion (m)	244 244	9% 19%
Depth of water table (m)	13 9 16	90% 87% 92%
Simultaneous presence of hazardous substances on site (x 10 l)	595 1,178 81	78% 77% 79%

TOTAL Civil works Edification

The location of the works with respect to essential services, population centres and industrial activities determines its ability to access the resources needed for its operation (water, electricity, fuels, materials), as well as the installations for managing resources generated as a consequence of our activity.

An longer distance means increased transport, which is also associated with a large increase in greenhouse gas emissions and a higher financial cost.

Knowing the distances becomes then a key information for the worksites at the time of establishing measures that improve its environmental and economic dimension.

Furthermore, the percentage of works in which the different variables have been assessed will also be reflected. These assessment percentages, which vary depending on the characteristics of the works and the surroundings in which are located, give us an idea of the representativeness of the indicator in the t of the company's works.

(Annex: Charts No. 3 and 4, page 61)

Characteristics of the works

INDICATORS	MEAN VALUES 2010	% VALUE
Surface area occupied by works (x 10.000 m²)	19.8 39.5 1.7	94% 95% 93%
Built area (buildings) (x 1.000 m²)	8.7 1.4 13.6	67% 56% 77%
Office space (x 1.0 m²)	33.7 32.6 34.7	90% 91% 90%
Workshop space (x 1.0 m²)	61.5 68.2 0.7	3% 6% 1%
Surface area of works with movement or presence of HW (hazardous waste) or DS (dangerous substances) (x 1.000 m²)	15.4 26.3 1.8	64% 74% 54%
Surface area of pavement or road through works (x 1.00 m²)	23.5 53.3 3.9	51% 43% 59%
Surface area of Public Water Supply or Maritime Terrestrial affected by the works (x 1.000 m²)	57 59.2 0.03	26% 52% 2%
Number of persons at the works (ut)	63 64.4 61.9	96% 95% 98%
Number of persons in the offices (ut)	10 12.9 7.3	92% 92% 92%
Number of auxiliary installations other than the works (plants, workshops, prefab units, quarries, landfills, machinery inventory…) (ut)	2.5 4.3 1	77% 78% 77%
Number of vehicles or machinery with combustion engine on site (not including generator sets) (ut)	18.4 31.3 5	88% 94% 82%
Number of generator sets on site for more than 5 days (ut)	3.3 4.3 1.9	66% 80% 54%
Number of cuttings of roads (ut)	6.7 10.5 1.6	64% 77% 52%

TOTAL Civil works Edification

In the execution of our works operations, we also try to gain insight into the principle theory of sustainability. For example, the construction of a rest home and adult daycare centre in Avilés (Asturias) is within our Sustainable Building Programme.

During the design of the building, architectural composition and other criteria, such as orientation, were taken into consideration in an attempt to reduce energy consumption during the use phase.

Furthermore, the selection of materials is also very important, especially those for the structural system and the enclosure; therefore in this site, recycled materials have been used in its concrete structure, plumbing framework, façade cladding or aluminium formwork, among others.

IInteraction with the environment

INDICATORS	MEAN VALUES 2010	% VALUE
Concrete plant production (x 100 m³)	319 371 77	9% 15% 3%
Production of the asphaltic agglomerate plant (x 100 t)	441 441	3% 7% 0%
Production of the aggregate plant (x 100 t)	551 631 50	9% 16% 2%
Installation of asphaltic agglomerate at the job site (x 100 t)	125 165 11	43% 68% 21%
Installation of concrete at the job site (x 100 m³)	106 170 45	94% 96% 91%
Amount of steel used on site (x 10 t)	72 91 52	13% 14% 12%
Percentage of night-time electricity used	7 12 3	90% 90% 90%

TOTAL Civil works Edification

Among the industrial activities, the construction activity and its associated industry, is the greatest consumer of natural resources, a fact that is reflected in the emissions associated with the manufacturing processes and transport of the materials which are, by far, the most significant of the activity.

Assessing the environmental dimension of the construction materials is trying to qualify and quantify the weight of their impact during their life cycle, from the extraction of the raw materials to the recovery or disposal of the waste. To do this, FCC Construccion quantifies and registers the main materials used for the performance of its works, both for those which are acquired from an external supplier, and those which are produced in our own plants.

Other key information reported by our works includes the volumes of managed hazardous substances.

In the case of the storage of inflammable, fuel, or hazardous substances, it is especially important to register this data in order to be able to act accordingly, properly gauging the preventive measures that will avoid a possible environmental accident and the risk this entails.

Volumes managed

INDICATORS	MEAN VALUES 2010	% VALUE
Volume of inflammable/ combustible substances stored (wood, paper, etc.) (m³)	39 76 8	9% 78% 85%
Volume of noxious or hazardous substances stored which may get broken accidentally (m³)	88 105 72	63% 64% 3%
Volume of aggregates and other materials collected which may cause turbidity in the water (x 100 m³)	101 112 2	19% 36% 3%
Volume of water extracted from the river (x 100 m³/year)	408 424 2	17% 34% 1%
Volume of water extracted from wells (x 10 m³/year)	653 659 500	8% 16% 1%
Volume of water consumed in different concrete manufacturing activities and for spraying levellings and surfacess (x 10 m³/year)	810 1,800 203	64% 51% 76%
Volume of vegetable soil needed at the works (x 10 m³)	1,045 1,519 693	32% 45% 20%
Volume of demolition work (x 10 m³)	254 286 204	55% 69% 41%
Volume of blasting (x 100 m³)	870 891 370	15% 31% 1%
Volume of bulk materials used at works (earth. aggregates. agglomerates and concretes) (x 100 m³)	1,013 1,925 113	89% 93% 85%
Volume of earth movement (excavations and fillings. cuttings and embankments) (x 1,000 m³)	136 268 17	96% 95% 96%
Volume of borrow pits and quarries operated (x 100 m³)	1,248 1,283 0	11% 23% 1%
Expected volume of earth and rubble (x 100 m³)	361 698 118	78% 69% 85%
Volume of landfill expected (x 100 m³)	994 1,118 76	23% 43% 5%
Volume of earth contaminated caused outside the works (x 10 m³)	589 802 3	14% 21% 7%
Volume of inert or non-hazardous mud dredged (x 100 m³)	513 513	5% 11% 0%
Volume of containment sludge used (bentonite) (m³)	476 534 408	16% 18% 14%
Volume of paint, solvents, release agents, cement curing liquids, accelerants, fluxing ingredients, antifreeze, epoxy resin (m³)	862 1,065 695	86% 82% 90%

TOTAL Civil works Edification

(Annex: Charts 5 and 6, pages 61 and 62)

Environmental impacts on the construction

The first step: to be aware of our impacts

In principle, any action exerted will have some effect on the context in which it impacts. Construction also interacts, although temporarily and not particularly powerfully, with the environment: air, water, soil, atmosphere, biodiversity, etc.

Because we know that it is impossible that our activity have no impact on the environment, we identify the environmental aspects associated with the company's activities, products or services which have a significant impact on the environment, with the aim of minimising them.

For this reason, each manufacturing plant or worksite indentifies, in its integrated planning process, those environmental aspects present, and assesses their relevance in accordance with the magnitude or quantity of contamination or alteration, and the importance or sensitivity of the receiver of the impact. Different environmental aspects are included in the following groups:

- Atmospheric emissions
- Noise and vibrations
- Water discharge
- Use of riverbeds or seabed and water catchment
- Operations which involve pollution, use and loss of soil.
- Consumption of natural resources (water, combustibles, raw materials, energy, etc.)
- Production and management of waste (dangerous, inert or urban)
- Emission of radiation
- Development of the land / environment
- Environmental accidents

Prioritisation of significant impacts

An assessment of the environmental aspects for each of our works and the integration of the results at corporate level allow us to highlight those aspects which, for the set of works studied, are significant more often and, therefore, more usually reproducible in the construction sector. This process is a prior step on the definition of actions that tend to reduce impacts that may be caused by our works, thus improving our environmental management and the result of our activity.

Data collected at the worksites from which we have processed and obtained information corresponding to the fiscal year 2010 are summarised below. This data tells us which environmental aspects identify each of the worksites and, from this, how many are significant, once we have assessed their scale and importance.

The charts included at the end of this Environmental Report show those environmental aspects which are significant in a larger percentage of works developed in 2010, considering those both for building and for civil works

(Annex: Chart No. 7, page 62)

The two environmental aspects that have been significant in a greater percentage of works throughout 2010 relate to impacts on the land or urban environment due to the dirt caused by transport operations.

In particular, the environmental aspect "Operations involving dirt coming into and out of the works" was significant in 47% of the works and the environmental aspect "Fall of granular material when being transported" in 41%.

It is worth stressing that although the percentages are slightly higher in civil works, these two aspects reoccur in the majority of the works when we assess both the building and civil works, therefore given the significant repercussion of these activities in the more immediate environment, different measures have been adopted in the works to prevent the dirt at these areas. Actions that are usually taken include the cleaning of access areas and public roads affected by transport, the covering of bulk lorries when transporting materials that may produce dust and washing the wheels of vehicles before they start out on the public highway.

The main emissions to the atmosphere in the construction sector are emissions of dust and particles, with other types of emissions, such as those of combustion gases or volatile organic compounds, not particularly significant. An example of this affirmation is the fact that, among those significant environmental aspects with greater representa-

tion in all of the works, six appear to be related to the dust generation.

Given that the implementation of an infrastructure usually means larger earth movements than for the building, as well as the transport of materials from greater distances, the following environmental aspects are deemed to be significant in a higher percentage of civil engineering works. "Dust emissions due to earth movements" (24% in all the works; 43% in civil works), "Dust emissions due to transport of earth and rubble" (23% in all the works; 42% in civil works), "Dust emissions due to machinery traffic" (21% in all the works; 42% in civil works), "Dust emissions due to demolitions" (19% in all the works; 21% in civil works), "Dust emissions due to the supply and stockpiling of powdery materials" (14% in all the works; 27% in civil works) and "Emission of dust due to blasting" (12% in all the works; 23% in civil works).

It is true that, in order to reduce dust and particle emissions to the atmosphere, the majority of the works use water to spray roads, rubble and stockpiles, which represent another of the most significant environmental aspects in the sector. However, this method of returning water to the environment is a very effective action for controlling what makes up the main source of atmospheric pollution.

Other actions usually carried out at FCC CONSTRUCCION works include the proper control of vehicle speeds at the works, the use of additives in the irrigation water to create a surface crust, full and effective covering of the transported materials which produce dust, definition of the area for machinery movement, the asphalt or stabilisation of the busiest areas, reduction of the height for dumping material, reduction in activity during windy periods - which may worsen the problem - or the use of enclosed conveyor belts.

Waste production is another of the areas which present a higher number of significant environmental aspects. Although the percentage of works with significant aspects relating to the waste production is higher in civil works than in building works, it should be pointed out that, next to those aspects relating to dirt on the public road, the "Waste Production" group aspects appear in the majority of building works.

Certain environmental aspects can be highlighted, such as the "Production of urban recovery waste and cleaning of installations/works" (23%), the "Production of hazardous waste from empty contaminated containers" (22%), the "Production of inert waste from excess excavated earth" (20%), the "Production of hazardous waste from paint, solvents, stripping and polishing liquids, resins,..."(19%), the "Production of hazardous substances from contaminated earth due to accidental spillages" (13%), the "Production of waste from non-hazardous containers and packaging" (13%) and the "Production of non-hazardous waste from formwork and moulds" (12%).

One of the usual methods for avoiding dirt at the entrance and exit of the site is the systematic use of sweeping machines.

Using both manual and mechanical means, the spraying of the roads and materials supplied becomes a simple and efficient Good Practice in order to reduce dust emissions, mainly associated to earth movement, the vehicle traffic and the transport of earth and rubble.

The proper waste seggregation at origin greatly facilitates its subsequent recovery or removal, and it is the first and essential step in achieving more efficient waste management. For this reason, all the FCC Construccion works adopt the measures required to reduce waste generation and guarantee its classification and selective removal at the works. All waste generated, but especially hazardous waste, complies with the health and safety conditions for storage prior to its delivery, thereby preventing contamination of the land from spillages or discharges that may occur.

Depending on the nature of the waste (considered as urban, hazardous or non-hazardous) a systematic approach is used for the correct operational control of each of them. In the case of hazardous waste, temporary and meticulous storage, and proper handling is carried out on site (never longer than six months and with unambiguous identification of its containers and contents using standard labelling), with the majority of actions consisting on periodic checking that the waste is not mixed and that the capacity of the containers is not exceeded, the water-tightness of the storage area and the establishment of a site location map of the waste deposit points.

On the opposite side to waste production is waste consumption, necessary for the execution of our works. In this regard, we can point out that one of the aspects inherent to the construction sector is the increased consumption of raw materials: water, sources of energy and construction materials.

Son, por tanto, consumos obligados por la propia actividad, They are, therefore, obligatory for the activity itself, more significant in civil works as shown by the fact that three environmental aspects of the "Waste Consumption" group are significant in more than 15% of all the Company's works and in more than 28% of works, if we exclude building works. These are "electrical power consumption" (22% and 28% respectively), the "Consumption of water used for spraying levellings and surfaces" (19% and 35% respectively) and the "Consumption of combustibles" (15% and 29% respectively).

In any case, we are mindful that the use of natural resources must not affect the ecological balance which sustains this use, therefore the rational use of resources is encouraged at FCC CONSTRUCCION: this is not so much about sparing their consumption, but of strictly consuming the quantity required and trying to use the materials to the maximum, by recycling and reusing them.

The most significant landfills of the construction activity are those relating to washing waters for installation of concrete. Due to its basic pH, it may affect the aquatic flora and fauna, therefore it is always stored and neutralised before its final dumping to the Public Water Works or Maritime-Terrestrial Public Works.

With the aim of maximising efficiency in electrical power consumption, natural lighting is fully exploited, information and awareness campaigns are carried out, and equipment is used that is more efficient at consumption equality, or fluorescent or low energy bulbs are used instead of incandescent ones. In the case of water, measures are being taken to reduce its consumption, such as the provision of automatic savers or the re-use of effluents and process waste water.

Construction and demolition waste mainly consists of stone material; hence its suitability for re-insertion in the production cycle, thus reducing the consumption of natural aggregates. Some actions which make us capable to contribute to reducing demand of this type of resources include the undertaking of demolitions, dealing with deconstruction criteria, the re-use of site resources or the recycling of stone materials for re-use as sub-bases in urban development works or as drainage material, for example.

In addition to the environmental aspects in a normal situation, the FCC CONSTRUCCION sites identify the initiating events that can give rise to possible environmental accidents such as fire, rupture of underground pipes and of hazardous substance storage tanks or containers, accidental discharges, floods or ground instabilities. For 1 in every 4 works, accidents associated with the "fire in inflammable/combustible substances storage area" were identified as potentially significant, while 15% of works carried out in 2010 assessed that if an "environmental accident due to rupture of underground pipes" were to occur, it would be significant.

The primary purpose of identifying possible environmental accidents and assessing their probability of occurrence is to be able to document prevention and avoidance mechanisms for the possible damages that may occur. It is for this reason that all FCC CONSTRUCCION works produce Emergency Plans for all their potential environmental accidents, which will show the preventive measures adopted and the action to be considered during the initial moments when the accident occurs.

With respect to the "Noise and vibrations" group, two aspects appear on the list as "Noise produced due to demolitions" and "Noise produced due to earth movement", significant in 18% and 16% of the works respectively.

Among the actions taken at FCC CONSTRUCCION works to reduce the risk of noise pollution is the execution of the noisiest tasks during hours compatible with the activity in the area, the use of modern machinery and its subsequent proper maintenance, the coupling of noise reduction devices to machinery that allows it, the availability of temporary antisonic screens or the execution of parts of works that can perform the function of sonic screens as soon as possible.

When we carry out demolitions, special attention is given towards reducing dust emissions and noise generation, two significant environmental aspects in this activity.

Good environmental practices

We want to present, once again, our system of Good environmental practices ®[1], which has been operating at FCC CONSTRUCCION since it was implemented in 2000. This system includes the implementation of a set of environmental practices in all our works, undertaken voluntarily and which carry greater demands than those provided in the law. And we want to tell it again, because we believe in it, we believe firmly that the definition of our environmental objective through the implementation of Good Practices is the best possible systematization of sustainability.

"The Good Practices is the framework which supports FCC CONSTRUCCION's environmental objective, consisting of a structure that helps each works to decide which opportunities to look for and which hazards to prevent"

Actions such as the spraying of roads and stockpiles in order to reduce dust emissions or the washing of lorry wheels before they are driven on the public highway to prevent dirt are Good Practices which are traditionally carried out in the construction sector; the importance of our system roots out precisely from the advantages associated with the systematisation of these traditional experiences.

The systematization allows us to learn what has been carried out, as the exercise of carrying out these Good Practices in all the works and reporting their degree of implementation at all times during their execution constitutes a knowledge process that not only reconstructs and orders the experience in a balanced way, but also interprets it, which allows us to use the knowledge generated to improve and transform the established system. Furthermore, it serves as a basis for theorising and generalisation, and for drawing on past lesson and sharing them, one of the objectives we are trying to achieve from the pages of this Environmental Report.

The Good Practices is the framework which supports FCC CONSTRUCCION's environmental objective, consisting of a structure that helps each works to decide which opportunities to look for and which hazards to prevent. Thus, each centre selects the most suitable ideas which conform to their characteristics, and which achieve with respect to the latter a greater or lesser grading which must in any event be more than 57 points (fixed objective in financial year 2010).

Good Practices are assessed with respect to their importance and their purpose. Greater importance is assigned to those which have a more significant impact on the final environmental quality, as well as those which involve greater effort in their installation, economic, technical and logistic well-being or any other circumstance. Furthermore, the degree of implementation for each good practice is evaluated from 1 to 3, with 3 being the greatest effort or the broadest scope in the implementation and 1 is considered the minimum in order to rate the Good Practice specifically.

The systematisation process for the application of Good environmental Practices in construction allows us to rescue, rediscover, organise and interpret our experiences and ultimately, "to think about what is being done", with the aim of making improvements in the execution of the "things to do".

(1) A ® FCC Construccion 2009. "Environmental performance assessment system through good practices".

The Good Practices of FCC CONSTRUCCION are defined within the following environmental areas:

- Relationship with society
- Atmospheric emissions
- Noise and vibrations
- Water discharge:
- Use, pollution or loss of soils
- Use of natural resources
- Production of waste
- Development of the land (biological diversity, urban environment)

From monitoring the Good Practices applied in the year 2010, we mainly draw the conclusions that are listed below.

- In 2010, almost the total works of FCC CONSTRUCCION (99%) carried out actions intended to restore the work sites and installations affected by the construction activities and installations, looking to reintegrate them from an environmental and landscaping point of view into the surrounding environment.

- In 98% of sites, environmental signposting is used with the aim of reporting to and raising awareness of the personnel who work at the site.

- Courses given to works managers, production managers, installation technicians, quality technicians, surveyors, etc. are critical, given that the application of Good environmental Practices is more than feasible. For this reason, during the last financial year, personnel from 98% of the worksites took the environmental training course scheduled by the company and in 92% of them environmental sensitisation and awareness talks have been given to the subcontractors.

- 96% of the works spray the roads and stockpiles as a control measure that manages to reduce the quantity of dust and particles generated as a consequence of the building activity.

- In order to prevent the occupation of more space than that strictly necessary, or in cases where there are especially sensitive areas, the site were delimited throughout 2010 (access areas and occupied areas) in 96% of the works.

- With the aim of preventing accidental discharges, containers will be provided for storing hazardous substances or hazardous waste in 95% of FCC CONSTRUCCION centres.

- In order to prevent to dirty public roads close to the worksites, 94% of FCC CONSTRUCCION works use different methods, such as the systematic sweeping of the entrances and exits or the cleaning of lorry wheels before they are driven on the public highway.

- 93% of the locations use modern machinery, and the suitability of the latter is checked against the work that must be carried out.

- In 94% of the works executed in 2010, or in almost all of them if we focus just on the civil works, the ownership has been involved in environmental management, because the fact that it knows first hand and participates in our management system ensures its correct implementation.

- All technical ability among subcontractors being equal, 92% of FCC CONSTRUCCION works use the application of an environmental management system as selection criteria which ensure respect for the environment in subcontracted activities.

- In 91% of our works, we try to reduce temporary occupation of pavements and roads, adopting fencing and signalling and trying to enable alternative pedestrian routes, wherever possible.

- With proper planning and by seeking to improve the environmental and economic results of the works, 89% of the sites have managed to reduce the inert waste taken to landfill with respect to the volume expected for the project.

The spraying of roads and materials supplied is a good practice that is easy to implement, cheap and efficient in reducing dust emissions mainly from machinery traffic at the works.

As well as the percentage of implementation, it is important to highlight the scope, that is, the degree of implementation or the intensity in the adoption of the measure. In the following cases, an increased percentage of works have reached the ultimate goal established at the time of implementing a particular action:

- In 75% of the works that re-use washing waters from concrete buckets, the latter is used in the concrete plant itself during its manufacturing process, thereby reducing the consumption of this resource.
- Some 67% of works that carry out automatic pH treatment of their basic effluents also carry out this neutralisation at all their discharge points.
- In 56% of works that apply Good Practices to reduce the impact of their blasts, in addition to protecting the affected area using rubber blankets or intermediate barriers and using low density explosives, the explosive charge is reduced by microdelay.
- In 52% of works, all the production personnel of the works have specifically undertaken the environmental training course.
- Some 52% of works that adopt environmental signalling use awareness posters in addition to environmental signalling to reduce the use of natural resources.

The following sections present information about the implementation of Good Practices in the works executed throughout the 2010 financial year. We want to show their practical application through a case study for each one of the areas, as well as to demonstrate that the use of each one of these prevention measures is converted into an opportunity which responds to a number of specific risks.

Una correcta cartelería ambiental en la obra permite recordar en cada momento los aspectos ambientales a considerar, estableciendo la base para disminuir la afección al medio ambiente o el uso de recursos como el agua o la energía.

The inert waste produced at our own worksites and in others in the nearby can be treated and used, reducing in this way the consumption of natural resources and the production of landfills.

Costs internalization clearly benefits the environment, the company and society as a whole.

Decanting pools, whether on site, or based on removable elements as is the case shown in the image, are simple and efficient mechanisms for preventing pollution and avoid wasting of such a valuable resource that is water.

Relations with society

GOOD PRACTICE

Barajas Airport Development

Client: Aeropuerto de Madrid Barajas

Problem detected:

The development of the zone made it necessary to alter the course of the Rejas Stream, a tributary of the River Jarama, so as not to interfere with the planning proposed in the Development Plan of the Madrid-Barajas Air Cargo Centre-South (CCAMB). Because the stream crossed commercial sites of CCAMB-South, it was decided to alter its course, channelling it through a trapezoidal-section channel. The new route runs parallel to the service road of the Nacional II Road, then it diverts to the north and finally it flows into the existing channelling next to the Airport site.

Channelling the Stream solved the land planning problem, but the project did not define its environmental treatment, which was essential to ensuring its landscape integration.

Solutions adopted:

As a proposal for the original project, FCC Construccion suggested the ecological channelling of the Rejas Stream, and it was decided to use a geogrid and then hydro-seed the area. A three-dimensional geogrid was selected, thus facilitating the vegetation growth through it; and besides it has anti-erosion and soil protection properties.

To execute the ecological channelling works, firstly the excavation necessary for the channel geometry was carried out; then the geogrid was laid down on the excavated slopes and the channel bottom was upholstered with gravel. Finally the slopes were hydro-seeded.

Results:

- The geogrid is an ecological and affordable solution, as the visual impact is minimal compared with conventional solutions used for streams channelling, such as rockfill or concrete. Furthermore, it constitutes a permanent reinforcement system for the roots of plants and a comprehensive and effective erosion control system.
- Other environmental benefits of the solution adopted are the creation of new habitats for plant and animal species - as it facilitates the biological development of the stream – as well as the non-toxicity of the materials used in the geogrid, which prevents damage to the environment.
- Its quick and easy fixing using metal pegs, the easy handling and the superb performance during installation also make it a profitable option from the economic point of view, thanks to reduced costs and lead times compared to other more conventional systems.
- We can therefore conclude that the solution implemented has achieved optimal adaptation to the environment, thus enabling the ecological balance to be re-established quickly and efficiently after completion the works.

Route of the original stream and of the new stream channelling, as a consequence of the development of the land (Arroyo original = original stream route; Arroyo encauzado = stream channelled)

Channelling of the Rejas Stream, with gravel at the channel bottom and slopes upholstered with geogrid hydro-seeded.

	ACTIONS - OPPORTUNITIES						Relationship with society	
	Training of personnel in environmental matters	Contracting of environmentally committed subcontractors	Customer involve-ment in manage-ment	Communication/ transparency with society	Attention to complaints, claims and suggestions	Appropriate environmental management recognised by society	Environmental improvements introduced in the project	Environmen-tal signalling
RISKS								
Shortcomings in relationships with people	✓		✓	✓	✓	✓		✓
Wastage of resources and increased waste generation	✓						✓	✓
Insufficient separation of the waste	✓							✓
Lack of awareness	✓	✓		✓				✓
Insufficient environmental training	✓	✓						✓
Limited communication with parties affected			✓	✓	✓	✓		
Projects with environmental affection						✓	✓	

We are committed to creating collective value

At FCC Construction, the creation of collective value against individual value is a strategic objective with attention focussed on long term success. For this reason, research into what has value for each one of our interest groups (customers, suppliers, subcontractors, workers and Society as a whole) becomes the finding of competitive opportunities.

We are committed to the transparency of information of our environmental agreements and the performance of environmental protective actions, and we want this diffusion to reach all of our employees and stakeholders, so that they are aware of it as well as to obtain feedback in this regard.

For this reason, aspects such as the education and training of the personnel in the company, the dialogue and establishment of communication channels with the stakeholders or their incorporation into the dynamics of environmental protection, making them participants in the role they can play, are key issues in the established system and thus the Good Practices have been assigned a high importance.

The Good Practices performed in the "Relationship with society" area and their degree of implementation can be read in the final Annex distinguishing by building, civil engineering works and all the works as a whole.

(Annex: Charts No. 8 and 9, pages 63 and 64)

FCC Construccion supports its work within the construction sector in the relationship with all the parties involved, looking to meet the worries of those people with whom we unavoidably interact.

It is for this reason that bilateral communication channels have been set up in order to be in permanent contact with our stakeholders, so that we are able to get to know their needs and expectations for information with respect to the environmental management of our works.

Environmental training

The first step that must be taken in order to achieve the real and effective application of Good Practices, and as a consequence, ensuring that our activity is a job that is most respectful of the surrounding environment, is to train the personnel involved. In addition to the cognitive learning of abilities, knowledge and skills, our courses encourage volitional learning, staff awareness, and attempt to generate a company culture of commitment to the environment. The involvement and "know how" of workers, suppliers and subcontractors facilitates the development of the works in a scenario of respect for the environment and within a favourable economic context.

Therefore, the production staff of 98% of the works carried out during 2010 fiscal year an environmental training course, scheduled within the company's Training Plan. Likewise, in 92% of the works, environmental awareness lectures relating to the subcontracted activities were given to the subcontractors, while those responsible and the operators of 83% of the works received environmental training.

This ensures that both own and subcontracted staff shares our knowledge, our needs and our environmental commitments, and they assume them as their own when performing their daily work on site.

Stakeholder involvement

On the way towards sustainability, it is necessary to combine different sources, perspectives and knowledge. No person or themselves have an impact on others, whether directly or indirectly, partly because our actions always,. With knowledge of this circumstance, involvement and dialogue with the different stakeholders is supported by FCC Construction, reinforcing in this way our environmental commitment.

Throughout 2010, 92% of FCC CONSTRUCCION works outsourced subcontracts with some environmental management system, verifying better environmental performance of the subcontractors in 72% of the worksites. Furthermore, in 94% of works executed during the last financial year, ownership involvement in environmental management was achieved through an initial presentation of FCC CONSTRUCCION Environmental Management System applied in the works, an action that achieved, in 28% of these works, active customer participation in some aspects of the Environmental Management Programme development.

(Annex: Charts No. 10 and 11, page 64)

Training in environmental matters is a key factor for workers whose tasks may have significant repercussions on the environment, so that they recognise the possible impacts of the tasks and the best OH&S techniques.

The environmental signalling deployed at FCC Construccion worksites provides the required environmental information, and helps to raise the awareness of the personnel involved, which is reflected in a greater consideration of the nearest environment.

Broadcasting information, codes and conduct relating to our Environmental Management System show our degree of implementation and is one of the initial steps for involving the rest of the stakeholders, such as customers and subcontractors, so that there is greater active participation throughout the processes.

Communication

Understanding the reality around us makes evident that communication with the stakeholders becomes a key issue within FCC Construction's policy.

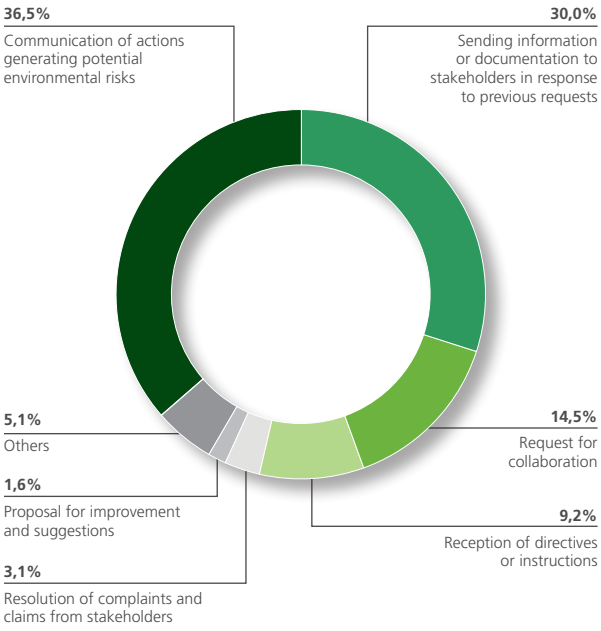
The established communication channels provide us with knowledge of the expectations of these stakeholders. It is vital given that this way we can integrate these requirements in the company's management system and respond to them; it raises the satisfaction level of the groups involved.

In order to get communication to reach an integral scope and be truly efficient, it is necessary to consider it in its three areas:

- FCC CONSTRUCCION image to general public
- Establishment of relations with stakeholders
- Flow of internal information (ascending and descending), both at the works and in the company.

The internal and external communication channels for the flow of information do not have an exclusive broadcasting task, but also they also help to receive information relating to environmental worries, improvement proposals or re-cognition for work carried out.

COMMUNICATION MATTERS



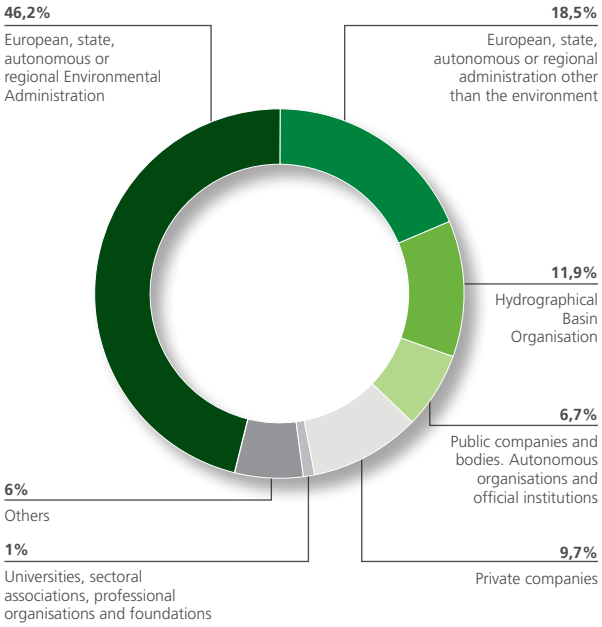

Para que la hierba vuelva a crecer al lado del puente

"… To build a bridge over a river is probably one of the most delicate jobs there is from an environmental point of view. Nowadays, protection goes much further in avoiding pillars over the seabed. It starts much earlier than the work and ends later. Construction of the new viaduct at Lugo is used to check this…"

And so the two page news article begins, in which the excellent environmental performance of the work "New Bridge over the river Miño" by FCC Construccion and describes the conscientious monitoring carried out by all the works team during the activities which posed a potential risk in environmental matters.

The social acknowledgement of the work which we performed at the works motivated us to continue improving day by day and it is a clear demonstration of our commitment to sustainable development.

COMUNICATIONS WITH STAKEHOLDERS



Therefore, for example, in the last financial year, 86% of our works dealt the complaints and claims received with the individuals affected, and it helped us to identify possibilities for improving the practical application of the management system. On the other hand, 36% of the works received congratulations notes, praises or rewards as response to their appropriate environmental performance, which shows us that the impact of our actions on society has been positive, demonstrating that the integration of all the variables makes it possible to obtain benefits beyond the purely economic.

During the last financial year, communication with stakeholders was carried out in accordance with what is shown in the following graphs with respect to the number of relationships established of an environmental nature in one way or another. All the environmental communications are structured according to the communication matter and the type of institution with which dialogue was established.

As a consequence of environmental communications with the stakeholders, 85% of works in the last financial year have dealt with aspects which can give rise to a significant impact relating to the organisation or institution that is directly involved. Furthermore, as a result of internal and external communications in 63% of the works, proposals have been made for environmental improvements with respect to the original project.

In relation to internal on site communications, and in the company itself, we can highlight that 98% of the locations make use of FCC Construction's standard environmental signalling to inform personnel and raise their awareness; and 13% of works have prepared at least one example of an experience to broadcast a Good Environmental Practice, and they published it on the intranet so that it is available to personnel at other works, thereby spreading the acquired knowledge.

The aim of all these Good Practices is to encourage the participation of all the agents involved and integrate them into a "culture" of responsible construction.

Atmospheric emissions

GOOD PRACTICE

Alcollarín Dam

Client: The Guadiana Hydrographic Confederation – Ministry of the Environment and Rural and Marine Affairs

Problem detected:

Among the main activities involved in the construction of the dam, there were the consolidation grouting and the completion of the interceptor drain and the grout curtain. In the initial project, it was estimated 1,989 m of drilling, with a diameter of 50 mm, which meant strong dust generation.

One of the main inconveniences of the dust generated from this type of activity is the large distance at which it can be spread, which possibly affects the nearby urban areas on especially windy days. Also, the large number of meters of drilling in concrete could be a source of pollution of river water Alcollarín.

Solutions adopted:

To avoid dust from spreading, FCC CONSTRUCCION decided that all the machinery that was to be used in drilling activity had to use a dust humidification system.

The water mains installed adjacent next to the dam were used to connect the hoses to the drilling machinery.

In addition to the environmental advantages of this action, it has also little technical difficulty and low financial cost, as no additional installation is necessary. Furthermore, it is a quickly to apply method which does not affect the execution of the works and which facilitates cleaning, as all of the material remains next to the hole drilled.

Results:

- By implementing this Good Practice, we minimised the amount of dust generated during drilling, leaving the drilled material next to the hole, which also greatly simplified its later cleaning.
- Tests performed by specialists of the University of Extremadura, in conjunction with FCC Construcción, confirmed that, thanks to the measures adopted, the impact on the atmosphere and the river water was nil.

Machine boring for consolidation grouting

Photograph showing where the dust from the drilling remains once the boreholes are made

Worker collecting the material after making the boreholes

	ACTIONS - OPPORTUNITIES							Atmospheric emissions
	Spraying of roads and stockpiles	Use of screens	Use of dust control systems	Use of pipe for discharge of rubble	Creation of value so as to improve the levels demanded	Suitable maintenance of the machinery	Speed restriction	Control and restriction of night lighting
RISKS								
Climate change						✓	✓	
Increased impact of particles in suspension (dust)	✓	✓	✓	✓	✓		✓	
Increase of COVs					✓	✓		
Fall in environmental quality	✓	✓	✓	✓	✓	✓	✓	✓
Light pollution					✓			✓

The main atmospheric emissions produced in the construction sector are dust and particle emissions, as has been evident in previous sections which showed that aspects relating to these emissions were significant in a higher percentage of works. Other less significant emissions which may occur as a consequence of the execution of a works are greenhouse gas emissions, emissions of volatile organic compounds or light emissions.

In order to reduce atmospheric pollution associated with the works' execution activities, FCC CONSTRUCCION proposes and implements a series of Good environmental Practices.

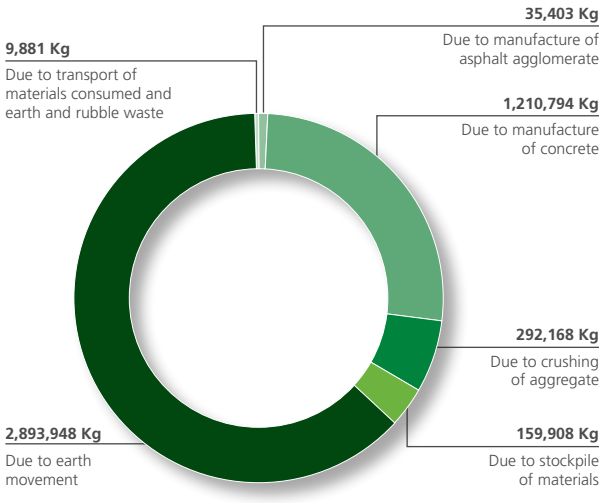
Air quality

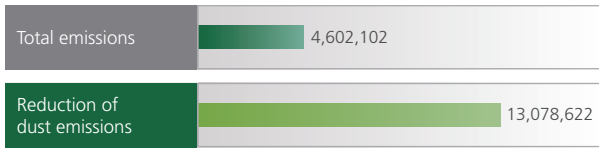
Operations such as the transit of machinery over unpaved roads, earth movements, transport of powdery materials or blasting inevitably generate dust and particle emissions which affect the air quality of the area surrounding the worksite.

To minimize the potential effects on vegetation, fauna and nearby residents, FCC CONSTRUCCION worksites implemented a series of Good Practices throughout 2010 in this regard, such as the systematic spraying of roads and stockpiles (96% of works), the use of pipes for discharge of rubble from a height or the covering of containers and lorries with tarpaulins (70% of works), the use of dust collection systems (65% of works), the reduction of dust emission at auxiliary installations (55%), the use of screens against the dispersion of dust in localised activities (46% of the works) or the use of crushers at dust producing installations (27% of the works), among others.

(Annex: Charts No. 12 and 13, page 65)

DUST EMISSIONS





The data of this table refers to all the works executed in 2010 at state level.

An actual application of Good Practices relating to dust suppression has meant a total reduction of some 13,000 tonnes of dust in 2010.

(Annex: Chart No. 14, page 66)

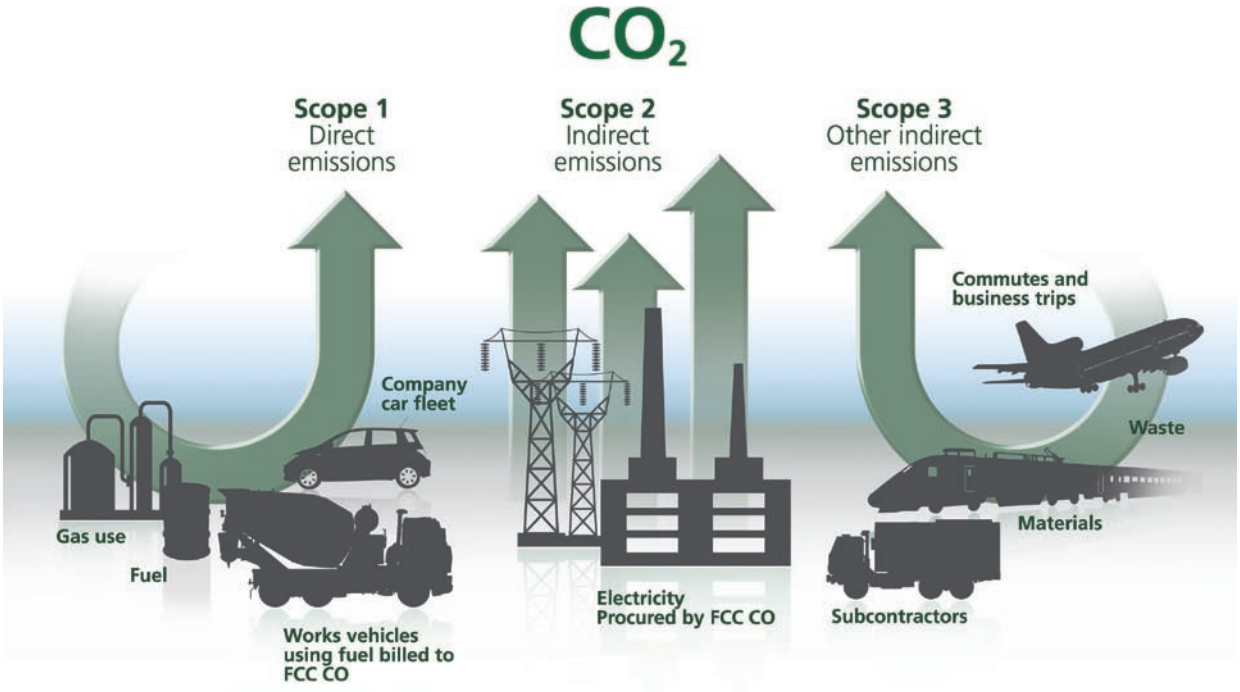
Because we are conscious that dust generation is inherent in our activity, Good Environmental Practices are implemented at all FCC Construccion locations to prevent and reduce atmospheric pollution.

27% of works executed in 2010 used molecular action sprayers at dust generating installations, as shown in the first image belonging to an aggregates treatment plant; and 15% of the works used additives in the water to create a surface crust or used any other lasting dust control practice.

Climate change

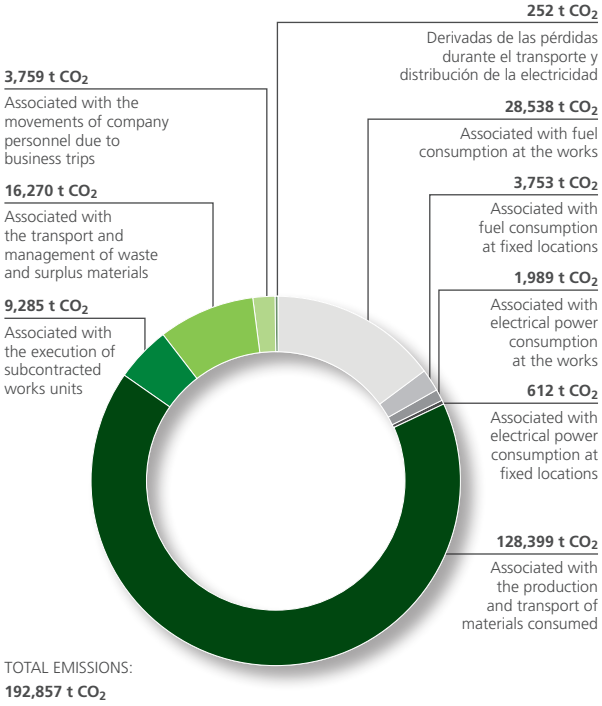
Other emissions that occur in the construction sector are those of greenhouse gases. Although of small magnitude, they are important as their generation is associated with the phenomenon of climate change.

Direct emissions of Greenhouse Gases in our sector are those associated with combustion in boilers, generator sets, the machinery and vehicles themselves, own asphalt manufacturing plants and diffuse emissions from cooling and air conditioning equipment. Like indirect emissions, we identify emissions derived from electrical power consumption. Finally, it should be highlighted that there are other indirect emissions which are a consequence of the company's activities, but which are produced in sources not owned by the company nor controlled by FCC CONSTRUCCION. These emissions fall into the scope 3 and their reporting is voluntary. However, the circumstances of our activity mean that these emissions are the most significant, as they represent 82% of the organisation's total emissions. For this reason, FCC CONSTRUCCION has decided to quantify and report greenhouse gas emissions associated with earth movement (excavations and fillings, cuttings and embankments, borrow pits and quarries), the production and transport of materials consumed, to the transport of left-over earth or rubble, to movements of company personnel due to business trips and losses during transport and distribution of electricity.



The image shows the operational limits of the emissions inventory of FCC CONSTRUCCION, by gropuing the different emission sources according to the scope.

DIRECT AND INDIRECT GREENHOUSE GAS EMISSIONS



The data of this table refers to all the works executed in 2010 at the state level.

Along with global concern and by following one of the Company's principles, FCC CONSTRUCCION must assume as a challenge for its activity to be part of the solution to the greenhouse gas emissions problem, and its strategies must address to integrate the carbon variable into the generic of its activities.

As a responsible company, we are making an effort in this area, and for this reason FCC CONSTRUCCION has developed, implemented and verified a protocol for quantifying and reporting our greenhouse gas emissions.

In the previous Environmental Report we presented data relating to this type of emission for the first time. Since then we have adapted the software applications in order to be able to register and integrate the works activity data and generate emission reports, we have refined our emission quantification methods, defined and reported activity systems and produced our first GHG Emissions report for the year 2010, which appears as annex in the web version of the Environmental Report 2011, available at www.fccco.es.

Going one step further, and with the aim of demonstrating our commitment from an objective stance, the inventory of GGEs has been subjected to a verification procedure by an external entity, therefore in this way we have become the first contractor to obtain this verification and entering into the group of nine Spanish pioneering companies.

In accordance with the established environmental objective in the company's Management Objectives, the works and fixed locations of FCC CONSTRUCCION shall apply a series of good environmental practices which go beyond the legal requirements. Some of these good environmen-

(Annex: Chart No. 15, page 66)

In order to reduce emissions of particles and greenhouse gases, FCC Construccion emphasizes a proper selection of machinery used at the worksites.

For this reason, the requirements at the time of purchasing the machinery are to be as efficient as possible with respect to fuel consumption and used dust collection systems, as in the case of the drilling machine in the image.

tal practices can lead to the reduction in Greenhouse Gas emissions. The complete quantification of the emissions prevented, or emissions which cease to be produced as a consequence of the application of the Good Practices are reflected immediately thereafter.

With the aim of reducing these emissions, 85% of the works executed in 2010 carried out appropriate maintenance of the machinery, aiming to use low consumption machinery and ensuring that the engines of vehicles were not operating during waiting periods, and in 87% of the same controlled properly the speed of the vehicles at the worksites. Furthermore, vehicles with the best available technology are used, inserting particle filters and other technologies and using more efficient fuels.

Other strategies that may be implemented at the worksites are controls of cooling temperatures, only using the air conditioning devices when strictly necessary, maintenance of the CO2 collection function from the vegetation, avoiding unnecessary felling and transplanting of trees to other areas, or the reduction and recycling of materials, preventing transport emissions associated with the consumption of materials and waste management.

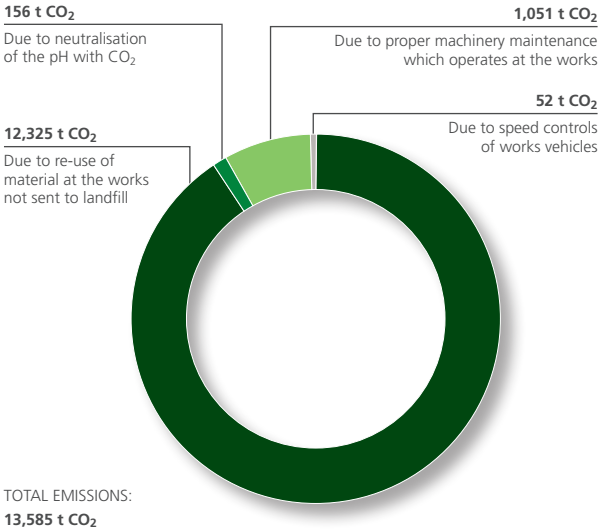
Light pollution

Other emissions that we must consider include light emissions, as an excess of lighting not only increases consumption of electrical power, but may also alter the life cycles of animal species in the environment and have negative effects on road safety and public safety.

The installation of environmentally friendly night lighting in 78% of the works executed in 2010 prevents light pollution in adjacent areas and guarantees the wellbeing of the animal species and citizens that may be affected.

(Annex: Chart No. 16, page 66)

AVOIDED EMISSIONS



The data of this table refers to all the works executed in 2010 at the state level.

Noise and vibration generation

GOOD PRACTICE

Enciso Dam

Client: Ebro Hydrographic Confederation

Problem detected:

The quarry proposed for the extraction of the aggregate necessary for the production of the concrete for the dam is located on a hill in the Sierra de la Hez (Arnedillo – La Rioja), at an altitude of 1200 m. This is located next to a SPA (Special Protection Area, a designation under the European Union Directive 79/409/EEC of 2 April 1979 on the Conservation of Wild Birds), which is inhabited by a couple of Bonelli's Eagles (Hieraaetus fasciatus), a species almost disappeared from the Spanish Northern Plateau and threatened with extinction.

The extraction of the limestone aggregate must be carried out through blasting with explosives, a method which may have an impact on these animals because of the noise and vibrations. The Environmental Impact Statement (D.I.A.) limits blasting activity out of the breading season of this bird of prey (established between the 1st of February and the 15th of July). The fact that blasting could only be performed between August and December significantly compromised the completion deadline for the works, as it was necessary to have a great amount of the aggregate produced and collected (around 70%) prior to producing the concrete and placing it onsite.

Solutions adopted:

In order to minimise the impact on the couple of Bonelli's Eagles, from the outset contact was maintained with the Environmental Department of the La Rioja (Regional) Government. Firstly, the operation of the quarry was planned in such a way that the excavation face would act as a screen to reduce the noise and dust caused by the blasts, the earthmoving machinery used during the operation and the aggregate crushing and sorting plant. This would help to decrease the noise levels transmitted to the SPA located in the vicinity of the works.

At the same time, a biologist was hired to track the pair of eagles and see to what extent the works affected the conditions of their habitat and their reproductive capacity. An initial series of visits were performed prior to blasting in order to check the condition of the couple of eagles and confirm if they used all of the nests, mountain ledges, and feeding areas, whose locations were provided by the staff of the Environmental Department.

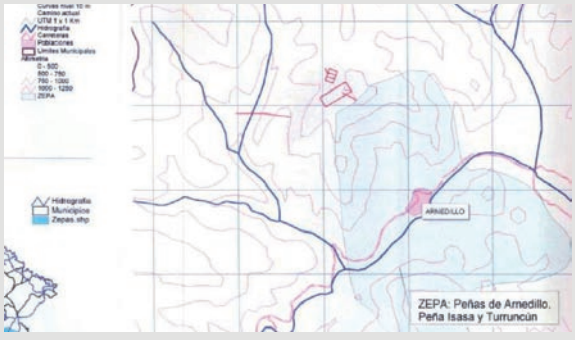
Together with the staff of La Rioja Government, it was decided that it was important to start blasting in December, one of the months at the beginning of the breeding season, so that either the individuals would get used to the noise and vibrations or they would have time enough to look for a nest further away from the area, where they would not be affected by the execution of the works.

The timetable scheduled for blasting was between 13:00 and 16:00 so that, should the eagle leave the nest due to the noise of the explosion, it would have time enough to return to it before the eggs or chicks got cold.

Furthermore, measures were taken to reduce the levels of air blast waves, such as not using an outdoor detonating cord, minimising the explosive load per millisecond delay and using suitable lengths of tamping.

Results:

- Measurements taken in the area of nests indicated that there were no substantial vibrations or increases in noise during blasts. It was also confirmed that the noises and vibrations caused by the crushing and sorting plant, and by the rest of the machinery used in the operation of the quarry, had no impact on the normal activity of the couple of eagles.
- All of the above demonstrates that, through the preliminary planning of the operational methods for the actions to be carried out (surveying, types of detonators, days and hours, etc.) and by incorporating various teams into the process (production, earthmoving company, quality assurance unit and the La Rioja Government), it was possible to make the continual operation of the quarry feasible and compatible with the presence of the couple of Bonelli's Eagles, and it was even discovered during the first season that a new, young specimen has arrived from elsewhere.



Map on which the location of the quarry and the area classified as a Special Protection Area for Birds can be seen.

Aerial view of the installations of the quarry.

	ACTIONS - OPPORTUNITIES						Noise and vibrations
	Noise and vibration reduction devices	Consideration of the environmental conditions	Reduction of the impact of blasting	Creation of value due to improvement of levels demanded	Use of modern machinery	Speed restrictions	Rational use of machinery
RISKS							
Sound pollution	✓			✓	✓	✓	✓
Discomfort to the neighbouring population	✓	✓	✓	✓	✓	✓	✓
Impacts on the fauna reproductive cycles	✓	✓	✓	✓	✓	✓	✓

The construction will produce unavoidable noise and vibrations which may cause discomfort, especially if the worksites are located in areas close to population hubs or in fauna habitats with species particularly sensitive to vibrations during breeding and reproduction periods.

Some Good Practices implemented at FCC CONSTRUCCION to reduce sound pollution during the execution of works include the insertion, in installations or in machinery, of noise/vibration reduction devices, rubber lining at specific noise impact sources, speed restriction of vehicle traffic at the worksites, efficient piping, availability of temporary sound screens, placement of machinery in areas that the least possible impact to the receptors, the use of modern machinery, proper machinery maintenance, consideration of the environmental conditions in the work programme or the mitigation of noise impact derived from blasts.

At the end of this Environmental Report there are examples of Good Practices adopted to reduce noise and vibrations caused by works performed during the last financial year.

Depending on the environmental conditions of each site, 89% of works executed in 2010 adjusted the planning of the works in order to properly distribute the noisiest or most irritating activities in space and time, and to minimise, in this way, the impacts on the fauna or on the neighbours affected by the works.

Furthermore, in 52% of the works, noise and vibration reduction devices were incorporated, while 48% of the works which carried out blasting work took steps to protect the area affected using rubber blankets, intermediate barriers, low density explosives and the reduction of the explosive charge, all of the latter with the aim to reduce the impacts of noise and vibrations generated during these specific activities.

(Annex: Charts No. 17 and 18, page 67)

Noise and vibrations are very relative aspects to our activities, but they are temporary, as their duration is limited on completion of the work.

However, during the period in which they are produced, several Good Practices are established to reduce sound emissions and the potential risks to the recipients.

For example, the control of sound levels in environments that are especially sensitive allows corrective or preventive measures to be established, such as placing very noisy activities in protected areas or respecting timetables which is less harmful to the zone being protected.

Drillings the rock entail higher noise levels, arising from the drilling work itself, rock fragments projected, the drive motor of the equipment, the compressor and the dust extraction or injection of water to reduce this emissions.

When the work is carried out in noise sensitive areas, it is advisable to use noise reduction devices, such as silencers, dampers or special exhaust pipes in the different equipment used or to install temporary sound barriers.

So, the discomforts derived from these activities can be minimised.

Water discharges

GOOD PRACTICE

Vic-Ripoll TJV

Client: CEDINSA

Problem detected:

During the construction of various foundations of the wall, it was necessary to reduce the amount leakage water accumulated to enable excavation, steel framework, formwork and concrete works to be completed. As a consequence of the earthworks associated with the excavation of foundations, the pumped water had a high concentration of suspended solids, a circumstance which logically precluded direct discharge it into a public watercourse, and it made necessary the installation of a water treatment system.

The main problem were the ground conditions, the existing traffic and the lack of space, what made unviable the installation of Water Treatment Plants with settling basins, as they are usually used on other sites. Furthermore, the system must be properly dimensioned to treat average flows of approximately 150m3/hour and it must be capable of absorbing the unpredictable peaks when the river flow increased.

All this implied an important difficulty of properly management the water flows originating from the water table.

Solutions adopted:

As an alternative settling system it was decided to use the water pumped out from the groundwater table to irrigate pasture fields located on the right bank of the River Ter, in front of the wall planned. This way, the field irrigated with the pumped water acted as a re-infiltration area.

As the works progressed and, therefore, the volume of water requiring treatment increased, it was decided to reinforce the above system by constructing sedimentation basins in the field itself. These basins were constructed as gravel filter containment walls, covered with geotextiles and aligned in a crescent shape row.

Maintenance work on the basins was performed regularly, removing solid materials deposited and replacing the gravel and/or clogged geotextiles.

Aerial photograph of the River Ter before and after the construction of Wall 13.5.

Resultados:

- The solution put forward made it possible to effectively treat the water flows originating from the water table, thus achieving values which made them suitable to be discharged into the Public Water Supply.
- To test the quality of the discharged water while constructing the wall, quality control was performed on the River Ter freshwater by taking samples and analysing the water on a monthly basis. The following parameters were tested: pH values, suspended solids, settling solids, BOD5, oxidability, dissolved oxygen, oils and greases, temperature, colour, conductivity and total phosphorous.
- All of these analyses, to which satisfactory results were obtained, confirmed the suitability of the measures taken.

Aerial photograph of the wall under construction and of settling basins aligned in a crescent shape row located on the opposite bank of the River Ter.

Detailed view of settling basins aligned in a crescent shape row located on the opposite bank of the River Ter.

	ACTIONS - OPPORTUNITIES						Water discharge
	Treatment of waste waters	Effluent decanting pools	pH treatment	Prior aeration to landfill	Creation of value due to improvement of levels demanded	Re-use of process waters	Choice of suitable cleaning systems
RISKS							
Generation of large volumes of waste		✓	✓			✓	✓
Water pollution	✓	✓	✓	✓	✓		✓
Acidification and subsequent impact on aquatic flora and fauna	✓	✓	✓		✓		
Loss of scarce resource						✓	✓
Increase in temperature and subsequent impact on aquatic flora and fauna		✓		✓	✓		
Eutrophication	✓	✓	✓	✓	✓		✓

The construction activity is constantly in contact with water, as on the one hand it is a necessary resource for a large number of actions, so that its collection and consumption is absolutely necessary; on the other hand, sometimes there exist effluent discharges and process water discharges to the ground, ground waters, rivers and the coastal environment. It should not be forgotten that river channels sometimes divert, gravel pits explode, and activities carried out in areas of public water supply or maritime-terrestrial public domains or work undertaken below the water table.

All of this compels us to consider the possible impacts on the hydrological environment that are derived from our activity, with the aim of maintaining the levels of quality of the recipient media for waters coming from the works area, and the quantity and distribution of the water flows, both surface and underground, from the area of influence of each centre.

In order to carry out proper management of the water and the discharges, FCC CONSTRUCCION works consider a series of Good Practices that are described in the Final Annex.

The main problems that can affect the quality of water are pollution, acidification, increase in temperature, turbidity, eutrophication and the consequent impact on aquatic flora and fauna. They are considered from the early stages, and for which the works set out a number good practices, such as sanitary water treatment, the effluent settling ponds for the establishment of a drainage system and treatment to treat the discharge of the work, retention barriers or treatment of sediment runoff.

Regardless of how small the flow of sanitation waters is, they must never be discharged directly. Therefore, septic tanks or portable sewage treatment plants were installed in 74% of the works of FCC CONSTRUCCION in 2010, asking for discharge authorizations and periodically analyzing the quality of discharges.

(Annex: Charts No. 19 and 20, page 67 and 68)

The use of geotextile screens is a very efficient method for separating fine constituents and, due to flotation, of the oils which can be carried by the oil-in-water emulsion, thus preventing pollution of coastal waters, as in the case of the River Miño, which we see in the photo.

With decanting pools we get, on the one hand, sedimentation of solids in suspension of waters coming from the different works activities and, on second, minimizing the potential risk of spillage of polluting or hazardous substances.

69% of the works use decanting pools, this figure rising to 75% for civil works. The purpose of these simple mechanisms is basically the sedimentation of solids in suspension in the effluents and the removal of grease and oils by flotation. Additionally, the colouring and the pH of the discharges can also be controlled whenever necessary.

In fact, at worksites with higher volumes of discharges, as in the case of effluents from tunnels, automated pH treatment of the basic effluents becomes an essential technique. So much so that 41% of the works in which their application is feasible install automatic sewage treatment plants at different discharge points of the works.

Another aspect considered by our works is to improve the efficiency of water use, in an attempt to reduce high discharge volumes. Seeking reducing consumption and the discharges, in the last financial year 72% of the works reused the wash water of the concrete tanks cleaning for the spraying of roads, for later tanks washing or for the onsite concrete plants. The effective application of this Good Practice meant a saving in volume of approximately 46,000 m^3, as shown in the chart in the following page.

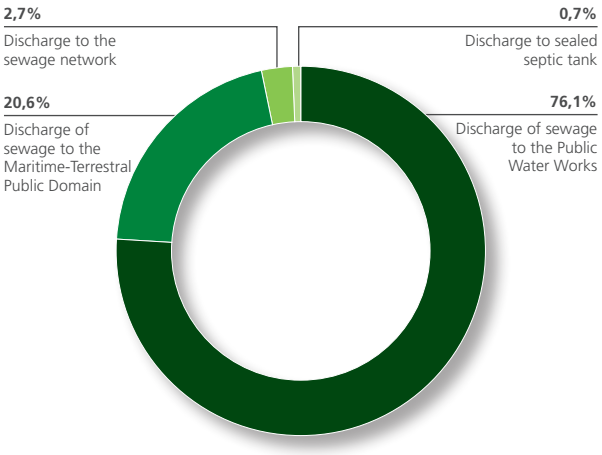
Due to the nature of the sector, it is difficult to make comparisons because the same worksite can have very different discharge volumes, depending on the activities being carried out. Nevertheless, we understand the importance of measuring and quantifying our interaction with the environment, always seeking to improve our environmental performance as much as possible. For this reason, shown below are the volumes of discharged water, treated water and re-used water at the works themselves, from the integration of all our works carried out in 2010 throughout the whole of Spain.

Furthermore, improvements in the systematic collection of data and software applications, enables us to report for

Either through containers or in areas enabled for such purposes, the washing from the gutters or buckets is stored and neutralised, as steps prior to its discharge to the environment.

These operations are essential to limiting the basic pH of the wash waters and ensure compliance with the quality parameters of the waters, established in the discharge authorisation or in specific legislation.

ACCORDING TO DESTINATION OF DISCHARGE



the first time in this environmental report the number and volume of the most significant accidental spillages, as well as the number of worksites located in protected natural areas or natural coastlines where any discharge that occurs is considered significant. This data can be seen below.

(Annex: Charts No. 21, 22 and 23, page 68)

DISCHARGE OF WASTE WATERS	
Type of discharge	**Volume (m³)**
Total discharge	**3,545,701.01**
According to nature of the discharge	
▪ Sanitary water	310,997.70
▪ Process water	3,234,703.31
According to destination of discharge	
▪ Discharge of sewage to the Public Water Works	2,697,703.62
▪ Discharge of sewage to the Maritime-Terrestral Public Domain	729,221.22
▪ Discharge to the sewage network	94,270.14
▪ Discharge to sealed septic tank	24,506.02
Recycled or neutralised water at the works	**46,248.27**
Treated water	**529,928.27**

MOST SIGNIFICANT ACCIDENTAL SPILLAGES		
Type of discharge	**N° discharges**	**Volume (m³)**
▪ Significant discharges at natural protected areas	40	3.92
▪ Significant discharges at natural coastline	62	6.08
TOTAL	**102**	**10.00**

WATER RESOURCES AFFECTED BY SIGNIFICANT DISCHARGES	
Type of impact	**No. of works**
▪ Significant discharges at natural protected areas	11
▪ Significant discharges at natural coastline	21
TOTAL	**26**

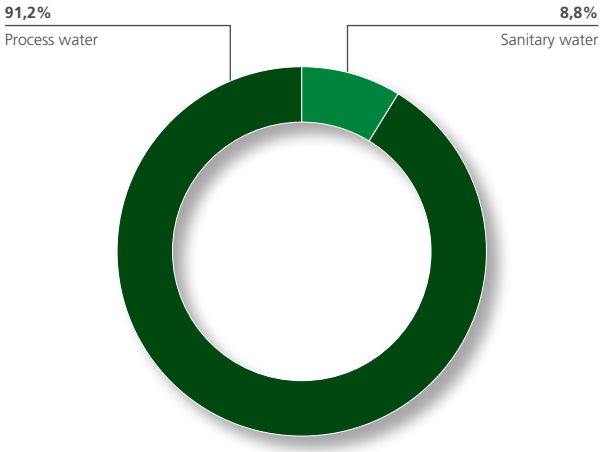
The data of this table refers to all the works executed in 2010 at the state level.

The increase in the water turbidity of the river, usually caused by the construction machinery, and its consequent decline of aquatic organisms, caused the Presa de Alcollarin works, in Caceres, suggest environmental improvements to the original project.

This consisted of the setting up of a provisional barrier using straw bales and a geotextile screen, downstream of the worksites.

The application of this measure is a clear example of sustainability, as it is a simple, low cost action which does not limit the stream velocity of the river and, on the contrary, it accomplishes its purpose of efficiently reducing turbidity, as demonstrated by the tests performed onsite.

ACCORDING TO NATURE OF THE DISCHARGE



Occupation, contamination or loss of soil

GOOD PRACTICE

High Speed Line Barcelona – French border Vilademuls-Pontós Line

Client: ADIF

Problem detected:

The High Speed Line route on the Vilademuls-Pontós section affects Casinyola Stream, because of the construction of a wall which differs to that initially planned for the project.

Because of mapping errors in the original project, the route of the wall needed to be altered, so that the new route trespass the stream channel. It required permanent diverting of the Stream Casinyola on a stretch of about 80 meters in length, and proceeded to the new demarcation, fixation and stabilization to prevent, among other things, loss of soil by erosion.

Due to these circumstances, it was necessary to use an intervention system to maintain the course of the water in its new location and to prevent it from travelling to its original location, following the dynamics of the watercourses. To achieve this goal and also ensure the optimal environmental integration of the channelling system, FCC CONSTRUCCION proposed using bioengineering techniques and slope stabilisation, which are perfectly suitable for this purpose given the low estimated speed of the water in this stretch of the Stream.

Soluciones adoptadas:

In order to improve the ecological condition of the channel of the Casinyola Stream in an area equal to that occupied by the construction of the wall, and to promote the functionality of the stream in this stretch as an ecological connector, a set of environmental integration measures and compensatory measures were proposed.

- By ***applying bioengineering techniques*** for setting the new channelling system, it was intended to integrate environmentally the new channel of the Casinyola Stream with the surrounding riparian habitats, thus restoring the continuity of the riparian vegetation along the river banks. To achieve this, the new stretch of the waterway was delimited by a new slope protected with a permanent geo-grid extending in the direction of the current. The foot of the slope was fixed by flexible gabions made of multi-fibred polypropylene mesh, to the channel bottom and to the extended geogrid. On top of these components, coconut fibre coir rolls pre-cultivated in nurseries offsite were placed, at the expected height of the water surface in the channel and they were fixed by wooden pegs. Eventually, a channel with a total width of 3 metres at the base between the slopes allowed water to flow.

- Through ***the restoration of the riparian autochthonous vegetation***, it was to maintain this stretch of the Casinyola Stream in a good condition of conservation. In the areas affected by the channel diversion and the construction works of the platform, the riparian vegetation of the zone was restored, to maintain its function as corridor and area of refuge for the fauna. To ensure a rapid implantation of vegetation, hydroseeding with a combination of grasses and selected autochthonous legumes was performed on all of the slopes protected with geogrids, in two stages: before and after placing the geogrid. Shrubs were also planted such as Sambucus nigra, Clematis vitalba, Ruscus aculeatus, Hedera helix, Cornus sanguinea and Salix cinerea on the slopes which are protected with permanent geogrids.

Resultados:

Bioengineering techniques and implanting of vegetation grant avoidance of soil erosion, thus achieving perfect landscape and environmental integration for the area. Furthermore, it is ensured that the river dynamics adapts the watercourse and the vegetation in its surroundings to the existing situation prior to acting.

Slope of the new channel.

Protecting the slope with geogrids.

Detail of the gabions and the coconut fibre mat over the geogrid.

Hydroseeded slope.

	ACTIONS - OPPORTUNITIES						Use, contamination or loss of soils
	Restoration of areas affected	Restriction of occupied areas and access areas	Prevent occupation of environmentally valuable zones	Concentration of auxiliary facilities	Prevention of accidental discharges	Correct execution of loading and unloading operations	Appropiate maintenance of the machinery
RISKS							
Occupation of the ground	✓	✓	✓	✓			
Visual impact on countryside	✓	✓	✓	✓			
Pollution of soil		✓	✓		✓	✓	✓
Destruction of the regenerative capacity of the vegetation		✓	✓		✓	✓	✓
Loss of potential uses	✓	✓	✓	✓	✓		

The soil is a primary resource, since it is the basis both for human activity and for the development of vegetation and associated with it, for the development of other trophic levels. We must be aware of the high vulnerability of this resource and the need to boost sustainable development of our activity, so that we can combine the construction of infrastructures with the conservation of edaphic properties on soil.

The construction sector has an unavoidable impact on this resource, as we occupy not only the area for the worksite but other auxiliary areas for the machinery depot, required access roads and stockpile zones. This may lead to a soil compaction greater than that strictly necessary or feasible soil contamination due to discharges or accidental spillages, which will significantly affect the regenerative capacity of the vegetation.

Due to the importance of this natural resource and the evident interaction with the construction activity, all the FCC CONSTRUCCION works shall apply the Good Practices that have been defined within this scope and are shown in the chart at the end of this report.

The restoration of the areas affected by the worksite facilities is a compulsory Good Practice at all FCC CONSTRUCCION works in which its application is possible, as it improves the conditions of the soil and integrates the works into the landscape, reducing the visual impact. For this reason, 99% of the works executed in the 2010 financial year performed a worksite restoration through operations such as cleaning and removal of foreign materials in the environment, the conditioning of the compacted soil, the removal of the topsoil, its collection and suitable maintenance for later reuse and the re-vegetation of the restored area.

(Annex: Charts No. 24 and 25, page 69)

It is important to restrict physical access to the most valuable areas adjacent to the worksite, as it means that we can prevent the possible compaction or contamination of the land and, therefore, the impact on vegetal species of the zone. This is the case for the pumping station works and feeder section from Cataroja to Benifaió, in the Community of Valencia, where certain areas were marked in order to protect the lilies there, as shown in the above image.

At the time of executing the works, it will be essential to occupy a site; however it is important to occupy only the site strictly necessary for the corresponding period.

To avoid occupying a wider site than strictly necessary, practically all the works executed in 2010 delimited the traffic area.

96% of the works established restrictions, both in the access areas and in the occupied areas, so minimizing the occupation of the land by the works, and consequently, avoiding affection or alteration of the soil.

These actions on the part of the works reduce the risks of occupation, compaction and contamination of the soil, and they maintain an appropriate structure thereof same, which permits the establishment and development of a permanent vegetation plot, thus respecting the potential uses of the land located at the area of influence of the works.

Machinery maintenance operations and the storage of hazardous substances and hazardous waste are some of the activities that may pose significant risks to the environment, if there be any accidental spillage. To prevent these situations, 95% of the FCC CONSTRUCCION works performed actions to prevent accidental spillages of polluting substances of any type.

These actions consist mainly of paying attention to the correct execution both of loading and unloading operations and of lubrication, cleaning, maintenance and fuel supply operations for the machinery, and in having hazardous waste or substances storage tanks available. Furthermore, as long as these storage facilities exist at the worksite, Emergency Plans will be issued in order to define the routine for action in the event of accidental spillages or breakage of containers or tanks which contain hazardous substances.

With the aim of preventing accidental discharges of oils, fuels, greases, etc., which could pollute the soil, waterproofed areas are enabled for carrying out lubrication, maintenance and supply of fuel to the machinery, such as the cleaning of tools and machinery.

Use of natural resources

GOOD PRACTICE

Zaragoza Tram

Client: Los Tranvías de Zaragoza Mixed Economy Company

Problem detected:

The Proposal and the Construction Project posed that the only way of managing CDW from the demolition of roads or any other structures were their disposal at an authorised landfill.

More than 115,000 m3 of this waste was expected and the only landfill which is considered by regional legislation to cover the area of Zaragoza is more than 40 km far from the city. These quantities implied the need that around 10,000 dump trucks circulate on the N-232 road - which is already saturated with heavy traffic - with the subsequent impact on the traffic at that road, the high consumption of fossil fuels and, therefore, the high emission of greenhouse gases, all against the backdrop of a high economical cost for the project.

Solutions adopted:

FCC CONSTRUCCION set forward a Waste Management Plan to the Ownership that suggested recycling this CDW, specifically the concrete and asphalt agglomerate rubble, in a plot close to the works. This measure would avoid the need to transfer CDW to a landfill, as well as it made unnecessary to transport virgin aggregates from a quarry, as the rubble resulting from the demolition would be recycled as aggregates to be used as fillers on the site.

The Waste Management Plan was approved by the Site Management and commenced with the separation at source of this CDW, followed by the collection of land, asphalt and concrete and delivering the rest of the CDW not to be recycled on the site itself (wood, steel, plastics, etc.) to an authorised waste manager. Moreover, the pertinent permits and authorisations for the recycling activities were obtained.

Currently the concrete and asphalt rubble is being crushed, obtaining aggregates of a high enough quality to be used as embankment fill, trench fill and even as an artificial aggregate for the base of the tram platform.

Resultados:

This experience has showed us that often the most environmentally favourable actions are, they are also the most financially viable. In short, we have a clear example of sustainable construction, which has achieved:

- a significant reduction in the consumption of natural resources, because by using recycled material onsite, it was not necessary to get aggregates from borrow pits or quarries to complete the filling during the second stage of the works (in total it is esteemed that around 90,000 m^3 will be used, what means 75% of the total fills used at this stage).
- a significant reduction in the consumption of fossil fuels, as it is not necessary to transfer waste to a landfill or bring aggregate for fills from quarries or borrow pits offsite.
- a reduction in CO_2 emissions, by reducing the distance travelled by vehicles.
- a reduction in heavy traffic on the N-232 and on the roads to the borrow pits.
- a reduction in the volume of landfills used.
- and as a consequence of all the above, a noticeable economic improvement in the results of the project.

Demolition of the road.

Recycling of CDW onsite.

	ACTIONS - OPPORTUNITIES					Use of natural resources	
	Re-use of inerts	Re-use of topsoil removed	Compensation of mass diagram	Use of elements recovered from other works	Exchange of surpluses with other works	Re-use of effluents and process waste waters	Reduction of water and power consumption
RISKS							
Over-exploitation of natural resources	✓	✓	✓	✓	✓	✓	✓
Drought						✓	✓
Climate change	✓		✓				✓
Difficult opening of borrow pits	✓	✓	✓		✓		

At a time of slowdown and ongoing depletion of natural resources, optimisation of consumption of construction materials is clear, both from a social and environmental perspective, and from an economic perspective.

It is true that throughout the whole life cycle of a building or infrastructure the main influence is exercised during the design phase, when constructive solutions are defined and the materials to be used selected. But also during the construction phase we can contribute to maximum reductions in the consumption of materials and power supplies associated with the performance of our activity.

One of the key actions is the promotion of the re-use and recycling of construction waste, as well as the use of materials of low energy content, low environmental impact and no negative impact on the health of workers and users.

The key is to ensure that every element that can be recovered or is recoverable enters into the network and this is achieved through recycling and re-use, both of inert materials such as earth or rubble, of elements from other worksites or from effluents and process waste waters. These actions are not only carried out onsite, but we also promote exchanges between worksites, so that a material which turns out to be surplus at one of the worksites will supply the needs of others.

The efficiency in the consumption of resources is a key opportunity for our company to reverse the current patterns of consumption and production. It is to adopt these environmental and social considerations in all of our processes and promote a greener economy in which economic growth is dissociated from the impact on the environment.

The charts enclosed as a final Annex show the implementation of Good Practices relating to the reduction of consumption of resources at FCC CONSTRUCCION works throughout 2010.

Among all the resources used in the construction sector, the inert materials stand out above the rest, given the large quantities that are traditionally used. One of the first additions considered at the works is the mass balance; it means compensation between products from excavation and those used in landfill. The fact that the use of contributions of the land itself, compared with external contributions, reduces the volume of borrow pits with respect to the

(Annex: Charts No. 26 and 27, pages 69 and 70)

Away to reduce the number of borrow pits provided in the project is to collect the clean earth and uncontaminated stone materials and use them later as fillers in the same worksite. This action was taken in the execution of project Hospital de Torrejón, at Comunidad de Madrid, reducing the external filler material and avoiding landfill carrying the superpuls material of the works.

number provided in the project; that happened in 79% of worksites in 2010.

Likewise, 64% of works executed in the previous financial year re-used inert materials from other works, extending their useful lives and reducing consumption of natural resources. Another example of the re-use of inert materials carried out by FCC CONSTRUCCION is that 31% of works use some kind of element in their crushing installations that was previously used in the works processes, such as removable concrete walls.

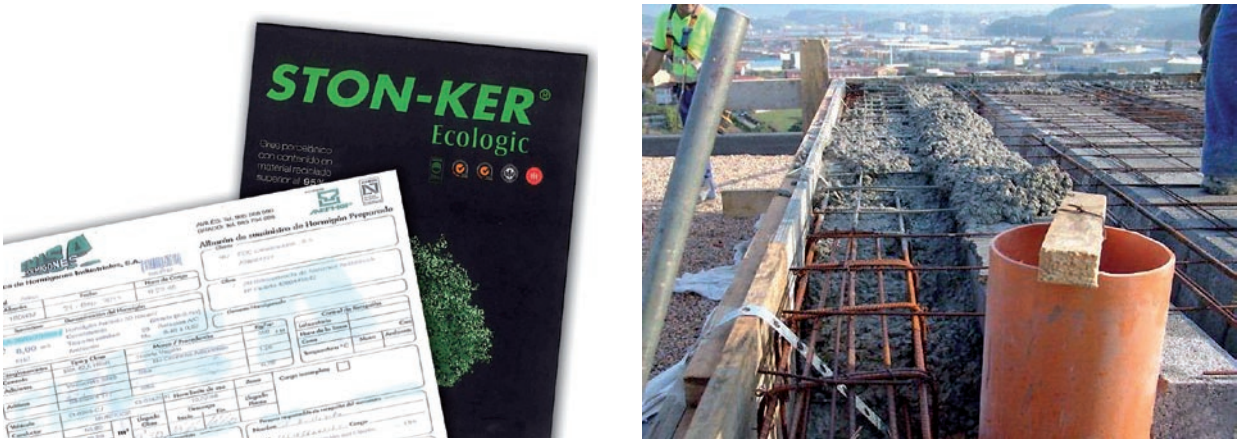
The re-use of topsoil removed for environmental restoration work on completion of the works is another fundamental aspect in the optimisation of resource consumption. This action is carried out in 83% of cases, and in addition to storing topsoil, proper maintenance is carried out throughout the works, so that this resource maintains its edaphic properties on soil and can be used on the site, guaranteeing the establishment of the future vegetative plot.

All the aforementioned Good Practices prevent new borrow pits having to be opened, reduce consumption and risk due to over-exploitation of natural resources, reduce waste generated and mitigate the effects of climate change, given the reductions achieved in the Greenhouse Gas Emissions.

The following chart quantifies the consumption of the main resources throughout 2010, specifying the waste that has ceased to be waste, as it has been re-inserted as a resource, thus demonstrating its value.

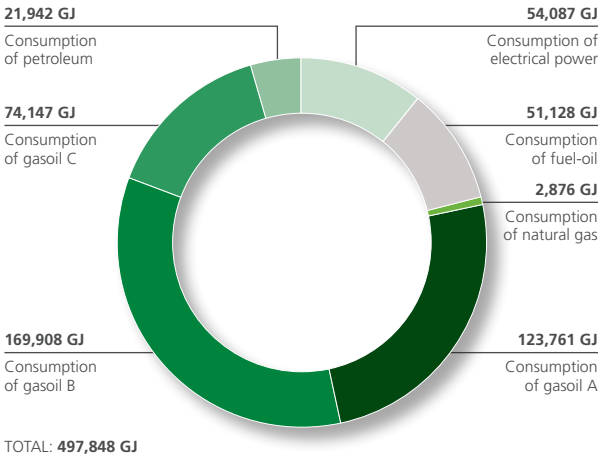
CONSUMPTION OF RESOURCES

Resource consumed	Ud.	Consumption
Raw materials and materials		
Asphalt agglomerate	t	1,773,002
Concrete	m^3	3,424,427
Steel	t	31,083
Topsoil	m^3	1.087,122
Paint, solvents, stripping substances, concrete curing liquids, accelerators, fluidifiers, antifreeze and epoxy resins	m^3	253,244
Other harmful and hazardous substances	m^3	6,254
Resources from valuation of inert waste	m^3	**7,151,125**
Surplus earth or rocks	m^3	7,112,591
Surplus clean rubble	m^3	38,534



One of the contributions to the sustainability of the construction works is their influence on the choice of materials containing recycled products. The images above show the practical implementation of these principles at an FCC Construction worksite, in which recycled aggregates have been used in the structural concrete, as well as Tiles obtained by recycling coloured surpluses and using them in the lining of the facade.

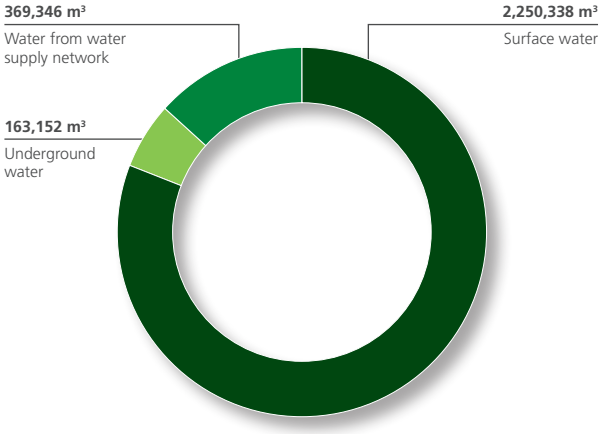
TYPE OF POWER



TOTAL: **497,848 GJ**

The data of this table refers to all the works executed in 2010 at the state level.

CONSUMPTION OF WATER BY SOURCE



TOTAL: **2,782,836 m³**

The data of this table refers to all the works executed in 2010 at the state level.

This image shows the application of the principles of rationality in the consumption of resources. At this works, the lorries are taking water from decanting pools and, after checking that it complies with the required quality conditions, then use it to spray roads inside the works.

We must consume water responsibly, especially in Spain where this resource is very scarce. For this reason, the FCC CONSTRUCCION works understand the concepts of "save", "exploitation" and "re-use" very well. We only consume what is strictly necessary, exclusively directing the water quantity and quality for each activity as corresponds to its use.

It is for this reason that the spray water in 62% of our works is recycled water, coming from the site itself or from external sources, but ensuring in each case that the water complies with the quality conditions required for its use.

Likewise, in 35% of worksites, the effluents and waste process waters are re-used, extending the life cycle of the water and thereby reducing its over-exploitation.

As far as possible, we are also reducing our power consumption by increasing the outputs of conventional systems or using more efficient, alternative systems.

And in reducing consumption, the first step is to measure it. The improvement of our software applications enables us to register consumption in all productive centres and extract information at different levels and for different periods of time, which makes easier to track its progress. For this reason, as a novelty, this Environmental Report shows consumption both at state level and at specific Autonomous Community level.

(Annex: Charts No. 28, 29 and 30, page 70)

Production of waste

GOOD PRACTICE

132 properties Rivas Vaciamadrid

Client: Rivas Urban Expansion Cooperative

Problem detected:

In the parts of the excavation which are not adjacent to existing roads, land containment for basements wall is attained by using double-sided concrete formwork. The poor quality of the material from the excavation meant that it was not suitable as a fill or for compaction of the backfill of the basement wall, so it was necessary to use fill material.

We also noticed that the land characteristics made the slope of the excavation very steep. This fact, along with the depth of the excavation - almost 12 metres -, involved a high risk of entrapment at the bottom of the excavation, in the event that filling and compaction was performed using traditional methods.

Soluciones adoptadas:

To make the filling it was decided to use aggregates that do not require compaction, selecting an aggregate from rubble recycling. This aggregate, composed mostly of ceramic products, provides the soil with a bearing capacity suitable for the pedestrian transit which it was intended.

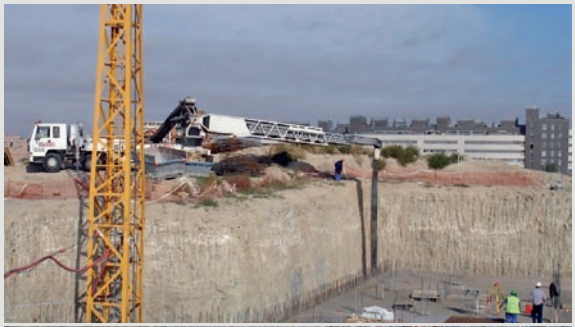
This solution makes unnecessary for personnel to access to the bottom of the excavation, thus resolving the safety problems raised.

Results:

- For backfill of the wall, approximately 9,800 tons of aggregates from recycling were used, with grain size 8/20. The use of recycled aggregates instead of aggregates from a quarry has resulted in a significant reduction in the consumption of natural resources, valuating a material which otherwise would have been destined for a landfill, and making unnecessary to extract natural resources.
- The implementation of this practice at the works demonstrates that using recycled materials, such as recycled aggregates, shows high technical expertise and it has associated clear environmental and financial benefits for the works itself and for Society as a whole.

Execution of the basements of dwellings.

On site placing of the material in basements 2 and 3, using a hopper-fed conveyor belt in coiled tubing.



On site placing of the material in basement 1, using a mini-excavator.

	ACTIONS - OPPORTUNITIES							Waste production
	Improvements in the design and construction process	Reduction of packaging waste	Purchase of material in suitable quantity and container	Correct identification and storage of waste and containers	Classification and individual management of the CDW	Compensation of mass diagram	Management of excavation surplus	Assessment "in situ"
RISK								
Generation of large volumes of CDW	✓			✓	✓	✓	✓	✓
Increased quantity and diversity of containers and packaging	✓	✓	✓	✓	✓			✓
Production of HW and associated risk	✓		✓	✓				
Increased quantity of earth and other excess excavation materials	✓					✓	✓	✓
Increase in production of waste due to inadequate storage		✓	✓	✓	✓			
Increase in production of waste due to inadequate transport		✓			✓	✓		✓

Construction, like other economic activities, produces a series of waste, from which the majority is characterised fundamentally as being non-hazardous, but is generated in increased volumes. if we add to this the fact that this construction and demolition waste has an increased potential for re-use and recycling, the effective reduction of this waste converts it into resources once more, becoming the great challenge of our sector, in the interest of achieving a more sustainable development of the construction activity.

Because of it, as the responsible company that we are, one of our duties is to know how to take advantage of the opportunities that each risk means for us, and in this way we can transform the need to reduce waste production into an economic, environmental and social advantage, through improvements in the design, promotion of recycled materials, proper planning of the purchase of materials, evaluation of the distances and costs of provisioning, etc.

Under the same approach, the new Law on Waste sets as an objective for the year 2020 that the quantity of non-hazardous construction and demolition waste intended for the re-use, recycling and other valuation, excluding uncontaminated earth and stones, must be reach a minimum of 70% in weight of those produced.

With the aim of complying with this Law and improving the efficiency of the resources, the works must increase their efforts in taking actions from the design phase and initial stages of the works, in order to reduce, on the one hand, the quantity of waste through the valuation of products or extension of their useful lifetime, and on the other hand, the content of hazardous substances in materials and products.

(Annex: Charts No. 31 and 32, pages 71 and 72)

One of the most important actions at the time of managing waste is the conditioning of stockpile zones, correctly marked and signposted for the temporary storage of hazardous waste.

There should be watertight containers in sufficient numbers and close to the generation point, with their contents in all cases properly identified and labelled with the pictogram hazardous, identification of the waste producer and the storage start date.

Recycled / used materials	Quantity predicted	Actual Quantity
Surplus soil and stones		
Disposed in landfill (m^3)	7,469,044	7,374,035
Used in the same project (compensation/excavation/fill) (m^3)	9,962,846	6,755,577
Used from other projects (m^3)	433,392	357,014
Used in other projects (m^3)	746,923	2,271,333
Obtained from borrow-pit (m^3)	4,925,582	3,692,463
Total excavation (m^3)	22,934,914	17,915,651
Total fill (m^3)	16,574,985	82,630,597
Clean rubble (concrete, bricks, tiles and ceramic, other)		
Disposed in landfill (m^3)	781,321	355,475
Used in the same project (m^3)	38,108	31,854
Used from other projects (m^3)	15,696	6,679
Used in other projects (m^3)	3,633	2,037
Delivered to a recovery installation (m^3)	54,250	50,736

An appropriate management comes from a prediction of the quantity of waste that will be produced in each one of the processes executed, and from initial knowledge of the most feasible management alternatives in accordance with the location of the worksite with respect to authorised managers of waste and other works or sites in which the waste can be re-used or valued.

The final Annex shows the data corresponding to the waste quantities predicted and the quantities actually managed throughout 2010.

Highlights what has been achieved concerning reduction of rubble (concrete, mortar, brick, prefabricated elements, others) which go to landfill. So, in relation to what was predicted, reductions have been made of 55%, which means that 425,846 m^3 has not ended up in landfill thanks to proper management of waste and resources.

Regarding surplus land or rocks, 95,000 m^3 had a destination other than the landfill, which was originally planned. However, it is important to note that in this case the real value is similar to the initially predicted, as many works currently plan the re-use of surplus earth or rocks, either at the worksites themselves or at other sites, as a preferred destination versus landfill.

The sample discussed illustrates the implementation of Good Practices relating to the waste management, as set out in the final pages of the Environmental Report. These actions intend to achieve a moderate and conscious consumption of natural resources, as well as to search for useful destination for surplus inert material other than landfill.

In the case of a considerable volume of demolition waste as a consequence of activities at the worksites, we support the valuation of them, both reducing the volume of inert waste to landfill, and the volume of aggregates obtained ex process borrow pit.

FCC CONSTRUCCION responds to the principle of prevention by applying Good Practices, such as the planning of changes in the design or construction system relating to the use of materials generating hazardous waste in 27% of its worksites, achieving, thus, generate less hazardous waste. Furthermore, at 61% of the worksites the quantity of packaging waste was reduced by implementing practices such as requesting materials in returnable packaging to the supplier, re-use of contaminated containers, reception of large volume elements or bulk goods usually supplied packaged, etc.

FMoreover, 40% of works executed in 2010 used methods for reducing the volume of waste generated, an action which encourages the reduction of land occupied by them at the worksite, as well as the volume for transport, thereby reducing the economic costs and atmospheric pollution associated with the transport of waste.

As regards the construction and demolition waste - which are a priority waste because of its high flow rate of generation and its high recycling potential - 87% of our works classify it in a minimum of one category more than those established by law, to perform a subsequent individualized management of these fractions.

In a higher percentage of FCC CONSTRUCCION works (89%), the quantity of inerts going to landfill has been reduced with respect to the quantity predicted in the initial project. To achieve this, Good Practices such as the valua-

During the construction of an urban development for a shopping centre in Zaragoza, soil excavated has been re-used onsite for refilling of the trenches, rather than disposal at authorised landfill, which was the management set out in the project. The above images show excavation using a trencher machine and later placement and compaction of the material.

This re-use of material has achieved a significant reduction in the consumption of materials and fuels, as well as a reduction in the emissions from transport and the volume of landfill sites used; all of this along with a considerable saving of costs.

With respect to the waste generated at the works, differentiated areas are established for its collection and storage, both for hazardous waste and for construction or demolition waste. This is the first step in providing proper treatment of our waste.

tion of rubble and its re-use at the works or at an external recovery plant (59% of works) are implemented, as well as the use of surplus from excavation in other works or for restoration tasks in degraded areas (68% of works).

The management of substances and hazardous waste deserves a special mention. Although not very significant quantitatively in the construction field, they are by the effects they can have on the environment and the different systems adopted for its treatment and management. All the hazardous waste is identified from the start in order to take into account the provisions of the law in force in this regard, and to consider the possible authorised managers and transporters around the worksite.

Whether the management of hazardous waste is assumed by the subcontractor or whether it is FCC CONSTRUCCION who assumes ownership of the waste, all the works have specific areas conditioned for carrying out safe and correct storage of the waste.

(Annex: Charts No. 33 and 34, page 72)

Regional planning

GOOD PRACTICE

UTE FFCC Manacor

Client: Serveis Ferroviaris de Mallorca

Problem detected:

During the inspection visits to decide the tree specimens to be transplanted prior to commencing the clearing of the old railway track, it was detected the presence of several specimens of the Hermann tortoise (Testudo hermanni).

This species is protected by Royal Decree 439/1990 and is included on the Balearic Catalogue of Protected Species, so extreme caution had to be taken not to harm any of the individuals which may be present in the area of the works.

Solutions adopted:

In order to prevent injuries caused by the mechanical tools to be used during the clearing works, or later by earthmoving works, all the personnel at the worksite was informed of the presence of this species in the area.

A protocol of action was defined and it was distributed to the managers, surveyors and subcontractors. It was a set of actions and instructions to be performed everyday prior to commencing the clearing, such as walking around the works area in order to find specimens, In the event of seeing a Hermann's tortoise, the protocol indicated that it should be reported to the Works Manager, so that the specimen could be picked up from the works area and transported to the worksite office.

The animals were kept in a cardboard box in a calm and cool place until they were collected by specialists from the COFIB (Consortium for the Recovery of the Fauna of the Balearic Islands). Additionally, the receipts for handing over the animals were filed, as well as records of the dates and the condition of the individuals at the time of their handing them over.

Results:

During the six months of execution of the work, around thirty specimens of Hermann's tortoise were saved, which can be considered a huge success, especially considering that the preliminary studies did not show that this species was present in the stretch where the works were to be executed.

Receipt for handing over animals to the COFIB.

Specimens of "Hermann's tortoise" on the site and in the worksite office of the TJV.

	ACTIONS - OPPORTUNITIES						Regional planning
	Protection of plants specimens	Transplants	Using native plants in restoration	Planning of the works (life cycles, critical stages…)	Transfer of habitats or individuals	Use of means to prevent dirt	Use of signposting, protection and signalling for reducing occupation of pavements and roads
RISKS							
Removal of vegetation	✓	✓	✓	✓		✓	
Erosion, desertification	✓	✓	✓	✓			✓
Impact on the fauna	✓			✓	✓		
Loss of biodiversity	✓	✓	✓	✓	✓		
Visual impact on the landscape	✓	✓	✓	✓		✓	✓
Dirt in the environment						✓	✓
Interference with traffic or external installations						✓	✓

The execution of our works interact inevitably with the surrounding environment and, in addition to abiotic factors on which we have been discussing throughout the previous sections, we have an influence also on biotic factors such as plant and animal specimens and their habitats, especially in the case of civil engineering works. Another aspect to consider is the interaction with the urban environment and the consequent repercussions on humans.

Being aware of these potential impacts, FCC CONSTRUCCION works apply Good Practices aimed at minimizing the impacts both on vegetation and animals and on the urban environment and the infrastructures. The list of these preventive measures can be seen in the final pages of this environmental report.

(Annex: Charts No. 35 and 36, page 73)

Biodiversity

In relation to the protection and conservation of vegetal species, 75% of our works protect the specimens most susceptible to being affected by the construction works or by machinery and vehicles traffic at the worksites, this percentage rising to 82% for civil engineering works.

Whenever, due to design conditions and project execution, it is necessary to remove certain vegetal species from their original location, 85% of works resort to transplanting arboreous specimens, so that they can continue with their photosynthetic function in an alternative ecosystem.

There are, likewise, actions for reducing the potential impact on fauna, being essential identification of the main animal species, especially the protected ones, and of those faunal corridors of the zone during the initial stages of the works.

38% of works executed in 2010 adapted the planning of their jobs to the life cycles of the most valuable animal species in the areas adjacent to their locations. In this way, the execution of especially noisy actions was reduced, such as blasting, transit of machinery and vehicles, earth movements and clearings during the periods coinciding with the fauna reproductive periods in the works environment, within the periods in which this is least harmful. The latter should not be effected at the first hours of the morning

To prevent damage to vegetal species located in the area nearest to the works, we proceed with the physical protection of these specimens, preventing, in all cases, the placement of ropes, nails, cables, chains, etc. on the trees and we carry out care and maintenance work.

The different actions of the works phase generates a series of changes to the land that can have repercussions on more sensitive animal species, therefore we have had to be especially careful when implementing actions and measures that favour the co-existence of animal species with the works carried out. This is the case of section III of the high capacity road which connects Tui and La Guardia (Galicia, Spain), where it was decided to replace the underpasses and branches of the drainage works provided in the original project, so that they could be used as fauna/wildlife corridors.

The change from reinforced concrete provided in the original project (first image) to granite masonry native to the area actually used (second image) and the increase in the underpasses sections, clearly improved its design from an environmental point of view and guaranteed that these elements did not continue to be a disincentive barrier to wildlife/fauna, so that they can be used and thereby prevent the barrier effect on the linear infrastructure.

and the last hours of the evening, as it is during these times when the biological activity of the birds is concentrated.

When a negative impact is exercised on animal specials, 34% of the works then proceed with the transfer of habitats that may be affected, carrying out subsequent monitoring of these individuals in order to ensure that they adapt properly to their new habitat.

All these actions reduce risks such as the elimination of vegetation and later erosion, the impact on fauna, the loss of animal and vegetal biodiversity and the visual impact on the landscape surrounding us.

The charts following show the size and number of works in 2010 that were located near or inside a natural space with high biodiversity, as well as the area protected and restored.

(Annex: Charts No. 37 and 38, page 73)

We consider that one of our main goals at the time of completing our works is leaving the site in suitable environmental conditions, integrating the human activity on the surrounding natural environment and the landscape. To do this, it is essential that all the worksites carry out their restoration tasks in the areas affected by the works and their premises.

A technique frequently used is the restoration of slopes in our works is hydroseeding.

An aqueous mixture of seeds, mulch, fertilisers and binding substances is sprayed over prepared ground by specialised mechanical means; it allows more rapid and easy seeding, ensuring better germination and, consequently, more vegetation possibilities for the ground than other conventional techniques.

Lands surrounding or inside protected natural areas or areas of high, unprotected biodiversity

Type of impact	N° Works	Surface area (m²)
Location in natural or protected settings	12	5,244,401
Location in area with landscape catalogued as relevant	27	889,215
Impact on natural river bed in protected area	11	208,681
Impact on vegetation catalogued or protected	20	769,390
Impact on catalogued or protected species	16	6.487,499

Restoration and protection of lands

Protection measures	Surface area (ha)
Restoration of affected lands	35.64
Protection of sensitive areas	24.97

The data of this table refers to all the works executed in 2010 at the state level.

Urban environment

The Good Practices of the "Regional Planning" group that apply to a large percentage of works are those relating to the possible reduction of impacts on the urban environment, mainly because regardless the works are building or civil engineering works, there is always a certain influence on the surrounding routes and this may bring discomfort to the residents of the zone.

Therefore, 94% of the works executed in 2010 used something to prevent dirt at the works entrance and exits, whether through entry and exit barriers, or through the cleaning of all lorry wheels before driven onto the public roads.

On the other hand, 91% of works took actions to reduce discomfort arising from the occupation of pedestrian areas and roads due to the installations of the works. Because of it, actions such as fencing, signalling at vehicle entrances and exits, the availability of alternative access roads or the reduction of authorised occupation of the space were taken.

In the event of temporary occupation of roads, it is essential to reduce discomfort for the users. One of the actions taken for this purpose is the systematic cleaning of highways and roads.

Building the future

Building the future is not only executing the works that will make up the scenery of tomorrow, but building confidence and ensure that future. The eagerness of continuity of the human species, the company and the person converge in the concept of sustainability, and the care of our environment is a key part of that concept.

"We are one more element in the structure of a society that wants to improve constantly, and therefore, we most inform, communicate, listen"

We are a process. We are the cause and effect of what happens to us. And it is necessary to revise this process and analyse the causes, and evaluate the effects. The internally established procedures for the operation and self-assessment represent valuable tools to advance on the way that we have set for growth and respect for the environment, our productive activity and service to the citizens, but these are not the only tools. It is not even sufficient. It is also necessary to submit to the judgement of the stakeholders the evolution and results of our environmental management activity, because our activity is carried out in an environment to which we are not alien, and from which we form part of the situation of equality. We are one more element in the structure of a society that wants to improve constantly, and therefore, we most inform, communicate, listen.

We have made some achievements of which we are proud. Our experience of responsible company makes those achievements also merits of the whole of society, which legitimises our satisfaction but does not warrant any kind of indulgence. We have also been wrong and we had to correct ourselves and learn. We have the path laid at our feet and, although we are our history (who we are and where we come from are the same questions), we cannot lose sight of the future we wish to follow.

And if the future was always different to the past, today it is even more so. A world in permanent change does not allow us to do what we have always done. We do not do the same things as always, but even more. For this reason we have had to refine our old methods in search of the improvement of results, greater efficiency, optimisation in resource management, elimination of inefficiency and redundancy in the processes. The improvements in the software applications and procedures, both for field data

collection and its processing in order to obtain information, are distinctive elements of these last two years. Good practices are a key element in our management, but the information and analysis of the results are essential for their improvement. Knowing our impact is essential for us to feel responsible for it and try to improve it.

In this regard, throughout the period 2010-2011, we have developed, implemented and obtained the first results of a protocol for measuring our CO2 emissions in accordance with the international standard ISO 14064 as well as with the directives from ENCORD. This has enabled us to issue our first greenhouse gas emissions report, which we have been able to verify with AENOR, becoming the first construction company to do so.

Not only that. We have increased and improved our communication channels with the stakeholders; increased the efforts demanded by the works in the adoption of good practices; contributed, through participation or through their leadership, in multiple international working groups to make Construction more sustainable; redoubling our efforts to take advantage of surplus materials at works against those eventually sent to landfill; completed, on many occasions, the resources-waste-resources circle, trained, motivated, cared for people, developed early warning systems; managed risks and uncertainties, supported the change, persevered, ultimately, in our responsibility and in our commitment.

We have built the present. Now we are the construction of the future.

Annex

Most relevant organisations in which FCC has played a significant role

Sustainable construction	
Organisation	**Participation**
International Technical Committee ISO/TC59/SC17 "Building construction/ Sustainability in building construction".	■ Participation in ISO/TC59/SC17/WG1: "General Principles and Terminology". (Principios generales y terminología). ■ Participation in ISO/TC59/SC17/WG1: "Sustainability Indicators for Buildings". (Indicadores de sostenibilidad en edificación). ■ Participation in ISO/TC59/SC17/WG1: "Environmental Declarations of Buildings Products". (Declaración ambiental de productos de construcción). ■ Participation in ISO/TC59/SC17/WG1: "Framework for Assessment of Environmental Performance of Buildings and Constructed Assets". (Marco para la evaluación del comportamiento ambiental de edificios). ■ Presidency of ISO/TC59/SC17/WG5 "Civil Engineering Works", on sustainability in civil works.
International Technical Committee CEN/TC350 "Sustainability of construction Works".	■ Participation in CEN/TC350/Task group: "Framework for assessment of buildings". (Marco para la evaluación de edificios). ■ Participation in CEN/TC350/WG1: "Environmental performance of buildings". (Desempeño ambiental de edificios) ■ Participation in CEN/TC350/WG2: "Building life cycle description". (Descripción del ciclo de vida del edificio) ■ Participation in CEN/TC350/WG3: "Product level". (Nivel de producto). ■ Participation in CEN/TC350/WG4: "Economic performance assessment of buildings". (Evaluación del desempeño económico en edificios). ■ Participation in CEN/TC350/WG5: "Social performance assessment of buildings". (Evaluación del desempeño social en edificios).
Technical Standardisation Committee AEN/CTN198 "Sustainable Construction".	■ Vice-presidency of the Technical Standardisation Committee AEN/CTN198 "Sustainable Construction". ■ Participation in the Technical Standardisation Sub-committee AEN/CTN 198/SC 1 "Sustainability in building". ■ Presidency of the Technical Standardisation Sub-committee AEN/CTN 198/SC 2 "Sustainability in civil works".
International Initiative for a Sustainable Built Environment (iiSBE)	■ Members:
Green Building Council España (GBCe)	■ Members of this organisation who make up the Consejo Español de la Asociación Internacional "World Green Building Council", serve as a channel for providing all the information in Spain on LEED buildings assessment method.
BREEAM Spain	■ Members of the Advisory Council, responsible for setting out the development strategies for BREEAM Spain, representing the stakeholders of the building sector.

Chart No. 1

Other environmental areas	
Organisation	**Participation**
International Technical Committee ISO/TC207 "Environmental management"	■ Participation in Sub-committee ISO/TC 207 SC1: "Environmental management Systems" (Sistemas de Gestión Ambiental) ■ Participation in Sub-committee ISO/TC 207 SC4: "Environmental performance evaluation" (Evaluación del comportamiento ambiental) – Working Group WG 4 "Data quality" (Calidad de datos).
Spanish National Committee on Large Dams (SPANCOLD).	■ Spanish National Committee on Large Dams (SPANCOLD). ■ Presidency of the Technical Committee "Activities of the Engineer in Planning". ■ Participation of "Environment" in the Technical Committee.
International Committee on Large Dams (ICOLD).	■ Participacion in the "Committee on Engineering Activities in the Planning Process for Water Resources Projects" (ICOLD), representing Spain.
State Council for Corporate Social Responsibility (CERSE)	■ Participation in the Working Group "Transparency".
AENOR's Advisory Board for Construction Company Certification.	■ Participation in the Environment Committee. – Working Group "Environmental indicators in construction".
SEOPAN	■ Participation in the Environment Committee
European Network of Construction Companies for Research and Development (ENCORD).	■ Participation in the working group for producing a CO2 measurement protocol in the construction sector. ■ Participation in the working group for producing a declaration of sustainability for European construction companies.
European Construction Technology Platform (ECTP).	■ Participation in the area "Quality of life" – Working Group "Reduce environmental impact". – Working Group WG3 "Improving the built environment for people".
Spanish Construction Technology Platform (PTEC).	■ Participation in the Strategic Plan for Sustainable Construction. – Coordination of Working Group 1: "Competitiveness" – Working Group 2: "Environment"

Chart No. 2

Main figures as indicators

INDICATORS				Mean values			% value		
				E	OC	TOT	E	OC	TOT
Interaction with the environment	1	Distance to the nearest population	m	365.1	1,112.1	717.2	97.65%	96.10%	96.91%
	2	Distance to essential community services such as the fire services, hospitals, schools, airports, power stations, telephones	m	2,707.6	4,188.1	3,497.2	61.76%	77.92%	69.44%
	3	Distance to housing or industrial activity	m	321.0	795.1	539.4	80.59%	75.97%	78.40%
	4	Distance to authorised non-hazardous or inert landfill	km	16.6	12,2	14.6	98.24%	94.81%	96.60%
	5	Distance to water masses	m	3,740.3	1,491.3	2,702.9	90.00%	85.06%	87.65%
	6	Channel length affected by diversion	m	----------	244.1	244.1	0.00%	18.83%	8.95%
	7	Depth of water table	m	16.5	9.1	13.1	92.35%	87.01%	89.81%
	8	Simultaneous presence of hazardous substances on site	l	807.9	11,784.8	5,947.9	78.82%	76.62%	77.78%

Chart No. 3

INDICATORS				Mean values			% value		
				E	OC	TOT	E	OC	TOT
Characteristics of the works	1	Surface area occupied by works	m²	17,352.6	395,100.2	198,819.6	93.53%	95.45%	94.44%
	2	Built area (buildings)	m²	13,574.7	1,422.7	8,758.7	77.06%	55.84%	66.98%
	3	Office space	m²	347.5	326.4	337.4	90.00%	90.91%	90.43%
	4	Workshop space	m²	7.0	682.2	614.7	0.59%	5.84%	3.09%
	5	Surface area of works with movement or presence of HW (hazardous waste) or DS (dangerous substances)	m²	1,899.3	26,300.1	15,402.7	54.12%	74.03%	63.58%
	6	Surface area of pavement or road through works	m²	387.5	5,330.7	2,352.9	58.82%	42.86%	51.23%
	7	Surface area of Public Water Supply or Maritime Terrestrial affected by the works	m²	33.3	59,194.4	57,056.1	1.76%	51.95%	25.62%
	8	Number of persons at the works	ut	61.9	64.3	63.0	97.65%	94.81%	96.30%
	9	Number of persons in the offices	ut	7.3	12.9	10.0	91.76%	91.56%	91.67%
	10	Number of auxiliary installations other than the works (plants, workshops, prefab units, quarries, landfills, machinery inventory…)	ut	1.0	4.3	2.5	77.06%	77.92%	77.47%
	11	Number of vehicles or machinery with combustion engine on site (not including generator sets)	ut	5.0	31.3	18.4	81.76%	94.16%	87.65%
	12	Number of generator sets on site for more than 5 days	ut	1.9	4.3	3.3	53.53%	79.87%	66.05%
	13	Number of cuttings of roads	ut	1.6	10.5	6.7	51.76%	76.62%	63.58%

Chart No. 4

INDICATORS				Mean Values			% value		
				E	OC	TOT	E	OC	TOT
Production of materials	1	Concrete plant production	m³	7,703.8	37,138.0	31,881.9	2.94%	14.94%	8.64%
	2	Production of the asphaltic agglomerate plant	t	----------	44,069.0	44,069.0	0.00 %	7.14%	3.40%
	3	Production of the aggregate plant	t	5,009.1	63.145.9	55,127.0	2.35%	16.23%	8.95%
	4	Installation of asphaltic agglomerate at the job site	t	1,152.7	16,499.2	12,553.0	21.18%	67.53%	43.21%
	5	Installation of concrete at the job site	m³	4,538.3	16,998.3	10,624.4	91.18%	96.10%	93.52%
	6	Amount of steel used on site	t	521.9	915.5	723.3	12.35%	14.29%	13.27%
	7	Percentage of night-time electricity used	%	3.5	12.0	7.5	90.00%	90.26%	90.12%

Chart No. 5

		INDICATORS		Mean Values			% value		
				E	OC	TOT	E	OC	TOT
Volumes managed	1	Volume of inflammable/combustible substances stored (wood, paper, etc.)	m³	7.8	75.9	38.6	85.29%	77.92%	81.79%
	2	Volume of noxious or hazardous substances stored which may get broken accidentally	m³	72.0	105.4	88.1	62.35%	64.29%	63.27%
	3	Volume of aggregates and other materials collected which may cause turbidity in the water	m³	249.1	11,218.0	10,156.5	3.53%	36.36%	19.14%
	4	Volume of water extracted from the river	m³/año	206.8	42,385.4	40,851.6	1.18%	34.42%	16.98%
	5	Volume of water extracted from wells	m³/año	5,000.0	6,589.6	6,526.0	0.59%	15.58%	7.72%
	6	Volume of water consumed in different concrete manufacturing activities and for spraying levellings and surfaces	m³/año	2,034.9	18,003.9	8,100.1	75.88%	51.30%	64.20%
	7	Volume of vegetable soil needed at the works	m³	692.7	15,193.9	10,453.1	20.00%	45.45%	32.10%
	8	Volume of demolition work	m³	2,044.2	2,861.0	2,538.0	41.18%	69.48%	54.63%
	9	Volume of blasting	m³	37,000.6	89,082.8	86,999.5	1.18%	31.17%	15.43%
	10	Volume of bulk materials used at works (earth. aggregates. agglomerates and concretes)	m³	11,319.8	192,553.3	101,307.3	85.29%	92.86%	88.89%
	11	Volume of earth movement (excavations and fillings. cuttings and embankments)	m³	17,348.1	268,387.2	136,389.2	95.88%	95.45%	95.68%
	12	Volume of borrow pits and quarries operated	m³	0.0	128,265.6	124,799.0	0.59%	23.38%	11.42%
	13	Expected volume of earth and rubble	m³	11,829.3	69,806.2	36,120.0	86.47%	68.83%	78.09%
	14	Volume of landfill expected	m³	7,605.4	111,799.7	99,460.9	5.29%	43.51%	23.46%
	15	Volume of earth contaminated caused outside the works	m³	35.2	8,018.4	5,889.6	7.06%	21.43%	13.89%
	16	Volume of inert or non-hazardous mud dredged	m³	----------	51,328.5	51,328.5	0.00%	11.04%	5.25%
	17	Volume of containment sludge used (bentonite)	m³	407.6	533.9	475.6	14.12%	18.18%	16.05%
	18	Volume of paint, solvents, release agents, cement curing liquids, accelerants, fluxing ingredients, antifreeze, epoxy resin	m³	695.5	1,065.1	862.4	90.00%	81.82%	86.11%

Chart No. 6

Environmental impacts on the construction

DESCRIPTION OF ENVIRONMENTAL ASPECT		% Of works in which the environmental aspect was significant		
		BUILDING (Over 170 works)	CIVIL WORKS (Over 154 works)	FCCCO TOTAL (Over 324 works)
U-06	Impact on land / urban environment due to operations that involve dirt being brought into and out of the works. Mud and loose material.	39% (67)	55% (85)	47% (152)
U-07	Impact on land / urban environment due to fall of granular material when being transported	32% (54)	51% (79)	41% (133)
M-02	Environmental accident due to fires in storage area of inflammable / combustible substances (wood, paper, etc.)	24% (40)	27% (41)	25% (81)
A-06	Emission of dust due to earth movement: excavations and fillings, cuttings and embankments	6% (11)	43% (66)	24% (77)
R-62	Production of urban waste coming from the restoration and cleaning of installations / works	8% (14)	40% (62)	23% (76)
A-10	Emission of dust due to transport of earth and rubble	5% (9)	42% (64)	23% (73)
R-28	Production of hazardous waste: Contaminated empty containers (paints, solvents, oil, glue, paint strippers, release agents, silicone, aerosols, explosives...).	26% (45)	18% (27)	22% (72)
N-41	Electrical power consumption	16% (27)	28% (43)	22% (70)
A-09	Emission of dust due to heavy machinery:	2% (4)	42% (64)	21% (68)
R-02	Production of non-hazardous or inert waste: Surplus earth from excavation	13% (22)	27% (42)	20% (64)
N-02	Water consumption for spraying levellings and surfaces	5% (9)	35% (54)	19% (63)
A-04	Emission of dust due to demolitions	16% (28)	21% (32)	19% (60)
R-22	Production of hazardous waste: Paints, solvents, stripping liquids, polishing liquids, epoxy resins, accelerants, antifreeze, accelerators, release agents and concrete curing liquids outside of specifications.	21% (36)	16% (24)	19% (60)
W-02	Generation of noise due to demolitions	16% (28)	20% (31)	18% (59)
W-05	Generation of noise due to earth movement: excavations and fillings, cuttings and embankments	8% (13)	25% (39)	16% (52)
M-06	Environmental accident due to breakage of underground piping (Electrical, Telephone, Water, Liquid or gaseous hydrocarbons)	10% (17)	21% (32)	15% (49)
N-21	Consumption of gasoil, fuel-oil, coal.	2% (3)	29% (45)	15% (48)
V-04	Disposal of wastewater: Installation of concrete	4% (7)	25% (38)	14% (45)
A-08	Emission of dust due to supply and stockpiling of powdery materials	1% (2)	27% (42)	14% (44)
R-23	Production of hazardous waste: Earth polluted from spillages of chemical products from the works, of gasoil and lubricating oil.	5% (8)	23% (35)	13% (43)
S-03	Use of riverbeds or seabeds due to actions in Public Water Supply or Maritime-Terrestrial	0% (0)	28% (43)	13% (43)
R-05	Production of non-hazardous or inert waste: Non-hazardous containers, packages	18% (31)	7% (11)	13% (42)
U-02	Impact on land / urban environment due to interference with the surrounding traffic outside the works	2% (3)	25% (38)	13% (41)
R-06	Production of non-hazardous or inert waste: Formwork and moulds	6% (10)	19% (29)	12% (39)
U-01	Impact on land / urban environment due to activities which lead to alterations to the countryside and to the natural heritage	1% (2)	24% (37)	12% (39)
A-05	Dust emissions due to blasting	1% (2)	23% (36)	12% (38)
U-05	Impact on land / urban environment due to operations that bring inconvenience to pedestrians and use of pavements and transit areas	8% (13)	16% (25)	12% (38)

Chart No. 7

Good environmental practices

Relationship with society

GOOD PRACTICE		I	GOAL (DEGREE OF IMPLEMENTATION)		
			1	2	3
0a	Production personnel of FCC (up to those responsible) who undertook the environmental training course scheduled by the company.	3	> 30 % of personnel of the works	> 60 % of the personnel.	> 100 % of the personnel.
0b	* Subcontractors who have received FCC environmental awareness talks, at least one hour, relating to subcontracted activities.	3	> 30 % of subcontractors	> 60 % of subcontractors	> 90 % of subcontractors
0c	Subcontractors who apply any environmental management system.	2	At least one subcontractor is certified ISO 14001 or EMAS	dem > 10 %	Idem > 25 %
0d	Environmental performance of the subcontractors.	3	> 30 % of subcontractors who carry out actions relating to waste optimisation provide their relevant permits and licences, and comply with their environmental contractual requirements.	> 75 % of subcontractors who carry out actions relating to the optimisation of waste, provide their relevant permits and licences, and comply with their environmental contractual requirements. ó > 30 % of the subcontractors carry out actions relating to waste optimisation provide their relevant permits and licences, and have environmental contractual requirements, which they comply with, in addition to non-conformities as consequence of their actions, or they do not occur, or they are identified and reported by the same.	> 75 % of the subcontractors carry out actions relating to waste optimisation provide their relevant permits and licences, and have environmental contractual requirements, which they comply with, in addition to non-conformities as consequence of their actions, or they do not occur, or they are identified and reported by the same.
0e	Relationship with stakeholders	3	All aspects that may give rise to relevant significant impacts have been covered with the customer and consensus reached on the solution to be adopted.	Those with highest impact on society have been dealt with by the authorities or by associations and potentially affected individuals.	Those which impact more on society have been dealt with by the authorities or by associations and potentially affected individuals.
0f	Complaints and claims.	3	All the C/C received have been handled with the individuals affected.	Consensus has been reached with them on solutions to adopt.	These actions have been taken and there is written acceptance in at least 50% of cases.
0g	Attainment of social recognition.	3	A note of congratulations has been received by the customer or local authority in relation to environmental performance.	A publication outside of the company praises environmental performance.	A prize was received with express mention of environmental performance.
0h	Ownership involvement in the environmental management.	3	The Ownership knows the implementation of the Environmental Management System at the works	The Ownership has actively taken part in some aspects of the development of the Environmental Management Programme	A formal presentation has been made of the Environmental Management System during a specific session, with slides and other audiovisual media
0i	Environmental training of at least four hours duration for production personnel from those in charge to operators.	3	100% of the persons in charge	100% of persons in charge and > 20% of operators / foremen	100% of persons in charge and > 50% of operators / foremen
0j	Environmental improvements introduced to the original project	3	An environmental improvement has been suggested to the original project although it has not been finally admitted.	An environmental improvement to the original project has been admitted.	More than one environmental improvement has been admitted to the original project.
0k	Adoption of environmental signalling at the works which helps to inform and raise awareness of personnel working at the works.	2	Standard environmental waste signalling is used in the whole works	Full standard environmental signalling is used in the whole works	Full standard environmental signalling is used in the whole works, and awareness posters are also placed.
0l	Broadcasting knowledge acquired on environmental matters.	2	At least one Experience to transmit should be issued, or an example of Good Practices (relating to environmental management) must be published on the intranet local office, Area or Technical Services so that it is available to other works.	Idem with 2 experiences to transmit or examples of Good Practices (relating to environmental management)	Idem with 3 or more experiences to transmit or examples of Good Practices (relating to environmental management)

Chart No. 8

GOOD PRACTICE		BUILDING				CIVIL WORKS				FCCCO TOTAL			
		%	1	2	3	%	1	2	3	%	1	2	3
0a	Production personnel (up to those responsible) of FCC who undertook the environmental training course scheduled by the company.	98	16%	24%	60%	98	22%	35%	43%	98	19%	29%	52%
0b	Subcontractors who have received FCC environmental sensitisation and awareness talks, for at least one hour, relating to subcontracted activities.	91	26%	48%	26%	93	31%	41%	28%	92	29%	44%	27%
0c	Subcontractors who apply any environmental management system.	89	68%	27%	5%	95	52%	38%	10%	92	60%	33%	7%
0d	Environmental performance of the subcontractors.	59	84%	9%	7%	83	72%	25%	3%	72	77%	18%	5%
0e	Relationship with stakeholders	77	76%	18%	6%	92	62%	22%	16%	85	68%	20%	12%
0f	Complaints and claims.	85	59%	34%	7%	88	38%	47%	15%	86	50%	39%	11%
0g	Attainment of social recognition.	35	75%	25%	0%	36	79%	21%	0%	36	77%	23%	0%
0h	Ownership involvement in the environmental management.	89	75%	22%	3%	99	59%	34%	7%	94	67%	28%	5%
0i	Environmental training of at least four hours duration for production personnel, from those responsible to operators.	82	55%	28%	17%	84	47%	25%	28%	83	51%	27%	22%
0j	Environmental improvements made to the original project	50	28%	55%	17%	69	24%	51%	25%	63	25%	52%	23%
0k	Adoption of environmental signalling at the worksites, which helps to inform and raise awareness of personnel working at the works.	98	23%	23%	54%	99	21%	29%	50%	98	22%	26%	52%
0l	Broadcasting of knowledge acquired on environmental matters.	0	-	-	-	24	100%	0%	0%	13	100%	0%	0%

Chart No. 9

Communication matters

Communication of actions generating potential environmental risks	36.5%
Sending information or documentation to stakeholders in response to previous requests	30.0%
Request for collaboration	14.5%
Reception of directives or instructions	9.2%
Resolution of complaints and claims from stakeholders	3.1%
Proposal for improvement and suggestions	1.6%
Others	5.1%

Chart No. 10

Comunications with stakeholders

European, state, autonomous or regional Environmental Administration	46.2%
European, state, autonomous or regional administration other than the environment	18.5%
Hydrographical Basin Organisation	11.9%
Public companies and bodies. Autonomous organisations and official institutions	6.7%
Private companies	9.7%
Universities, sectoral associations, professional organisations and foundations	1.0%
Otros	6.0%

Chart No. 11

Atmospheric emissions

GOOD PRACTICE		I	GOAL (DEGREE OF IMPLEMENTATION)		
			1	2	3
1a	Reduction of dust by spraying water on lorries and stockpiles.	2	Sporadic application	Frequent application	Systematic application
1b	Use of additives in the spray water to create a surface crust, surfacing of traffic lanes, and other hardwearing dust control practices.	1	Sporadic application	Frequent application	Systematic application
1c	Use of screens against dust dispersion.	1	Over more than 30% of the area perimeter where dust is produced.	Idem in more than 60%	Idem in more than 90 %
1d	Use of molecular action crushers in dust producing installations, such as aggregate treatment plants etc.	2	Crushers at more than 30% of dust generation points.	Idem in more than 60%	Idem in more than 90 %
1e	Use of drilling machinery with dust humidifying system, set up of wet curtain at ventilation duct outlets, and other dust capturing systems.	3	Implementation in an activity.	Implementation in two or more activities.	Implementation in five or more activities.
1f	Improvement of levels demanded by legislation in controlled parameters (opacity of discharges, etc.).	3	Systematic obtaining of better pollution levels than those demanded in more than 5% of all the controlled parameters	Idem in more than 15%, or in more than 30% in half of the controlled parameters	Idem in more than 30% on all controlled parameters.
1g	Proper maintenance of the machinery that operates at the works	2	Preventive maintenance, in addition to what is required by legislation, in at least 30% of the machines operating at the works	Preventive maintenance, in addition to what is required by legislation, in at least 60% of the machines operating at the works	Preventive maintenance, in addition to what is required by legislation, in at least 90% of the machines operating at the works
1h	Night lighting that is respectful of the environment	1	Directional lighting instead of ambient lighting on at least 30% of the surface area, or automatic switch on and switch off	Directional lighting instead of ambient lighting on at least 60% of the surface area, or automatic switch on and switch off	Directional lighting instead of ambient lighting on at least 90% of the surface area, or automatic switch on and switch off
1i	Use of pipes for discharge of rubble from a height, and covering of the containers with tarpaulins	1	In more than 30% of the containers	Idem in more than 60%	Idem in 90%
1j	Proper speed control of vehicles at the works.	1	More than 30% of works roads to have speed restriction signposting	Idem in more than 60%	Idem in more than 90 %
1k	Reduction in dust emission in auxiliary installations.	2	Screening over parts of the installation.	Individual fairing of some equipment of the installation.	Fairing of the entire installation.

Chart No. 12

GOOD PRACTICE		BUILDING				CIVIL WORKS				FCCCO TOTAL			
		%	1	2	3	%	1	2	3	%	1	2	3
1a	Reduction of dust by spraying water on lorries and stockpiles.	94	35%	48%	17%	99	6%	51%	43%	96	20%	50%	30%
1b	Use of additives in the spray water to create a surface crust, surfacing of traffic lanes, and other hardwearing dust control practices.	0	-	-	-	20	83%	0%	17%	15	83%	0%	17%
1c	Use of screens against dust dispersion in localised activities.	64	33%	22%	45%	29	67%	11%	22%	46	44%	19%	37%
1d	Use of molecular action crushers in dust producing installations, such as aggregate treatment plants etc.	0	-	-	-	32	43%	43%	14%	27	43%	43%	14%
1e	Use of drilling machinery with dust humidifying system, set up of wet curtain at ventilation duct outlets, and other dust capturing systems.	62	75%	25%	0%	67	83%	17%	0%	65	81%	19%	0%
1f	Improvement of levels demanded by legislation in controlled parameters (opacity of discharges, etc.).	11	100%	0%	0%	11	67%	33%	0%	11	75%	25%	0%
1g	Proper maintenance of the machinery that operates at the works.	80	52%	29%	19%	90	24%	34%	42%	85	37%	32%	31%
1h	Night lighting that is respectful of the environment.	75	55%	19%	26%	81	61%	33%	6%	78	59%	27%	14%
1i	Use of pipes for dumping of rubble from a height, and covering of the containers with tarpaulins.	79	42%	26%	32%	14	50%	50%	0%	70	42%	27%	31%
1j	Proper speed control of vehicles at the works.	71	35%	28%	37%	97	12%	37%	51%	87	20%	34%	46%
1k	Reduction in dust emission in auxiliary installations.	50	100%	0%	0%	56	20%	40%	40%	55	33%	33%	34%

Chart No. 13

Dust emissions

Type of impact	Kg dust
Due to manufacture of asphalt agglomerate	35,402.84
Due to manufacture of concrete	1,210,794.41
Due to crushing of aggregate	292,167.55
Due to stockpile of materials	159,908.28
Due to earth movement	2,893,947.62
Due to transport of materials consumed and earth and rubble waste	9,880.88
TOTAL EMISSIONS	**4,602,101.59**
REDUCTION OF DUST EMISSIONS	**13,078,622.08**

Chart No. 14

Direct and indirect Greenhouse Gas Emissions

Emissions classified by scope	t CO_2
Scope 1: Direct emissions of GGE	**32,290.71**
▪ Associated with fuel consumption at the works	28,537.64
▪ Associated with fuel consumption at fixed locations	3,753.07
Scope 2: Indirect emissions of GGE	**2,600.47**
▪ Associated with electrical power consumption at the works	1,988.89
▪ Associated with electrical power consumption at fixed locations	611.58
Scope 3: Other indirect emisssions	**157,966.09**
▪ Associated with the production and transport of materials consumed	128,398.98
▪ Associated with the execution of subcontracted works units	9,285.43
▪ Associated with the transport and management of waste and surplus materials	16,269.98
▪ Associated with the movements of company personnel due to business trips	3,759.45
▪ Derived from losses during transport and electricity distribution	252.25
TOTAL EMISSIONS	**192,857.27**

Chart No. 15

Avoided emissions

Avoided emissions	t CO_2
Due to re-use of material at the works not sent to landfill	12,325.25
Due to neutralisation of the pH with CO_2	156.52
Due to proper machinery maintenance which operates at the works	1,051.18
Due to speed controls of works vehicles	51.90
TOTAL EMISSIONS	**13,584.85**

Chart No. 16

Noise and vibrations

GOOD PRACTICE		I	GOAL (DEGREE OF IMPLEMENTATION)		
			1	2	3
2a	Incorporation, in installations or in machinery at the works, of noise/ vibration reduction devices such as mufflers, anti-noise barriers, silencers, shock absorbers, etc.	3	Presence of these devices in any equipment considered critical.	Idem in 50% of the equipment considered critical and in 50% of that used in night-time jobs.	Idem in 100% both in critical and in that used in night-time jobs.
2b	Rubber coated hoppers, mills, sieves, containers, buckets, etc.	2	Presence of rubber coated elements.	More than 30% of these elements are protected against noise.	Idem in more than 60%
2c	Consideration of the environmental conditions in the work programme	2	Restriction of noisy activities to the least irritating timetable.	Restriction of noisy activities to the least irritating times of the year.	Prompt and frequent interruption of works with respect to environmental conditions
2d	Reduction of the impact of blasts	2	Protection of the area affected by using rubber blankets, intermediate barriers between the affected zone and the origin of the blast; and protection of the sensitive elements by using tarpaulins, meshes and any other device.	Furthermore, the use of low density explosives	In addition, reduction of the explosive load by microdelay during blasting, or preparation of decoupling or spacing of the load
2e	Improvement of the levels demanded by legislation on controlled noise levels.	3	Systematic obtaining of improved noise levels to those required by 5%.	Idem in more than 15%	Idem in more than 30%
2f	Use of modern machinery	2	Percentage of machinery with CE mark (own and subcontractors') above 30%	Idem greater than 60%	Idem greater than 90%

Chart No. 17

GOOD PRACTICE		BUILDING				CIVIL WORKS				FCCCO TOTAL			
		%	1	2	3	%	1	2	3	%	1	2	3
2a	Incorporation, in installations or in machinery at the works, of noise/vibration reduction devices such as mufflers, anti-noise barriers, silencers, shock absorbers, etc.	44	89%	11%	0%	58	65%	24%	11%	52	73%	20%	7%
2b	Rubber coated hoppers, mills, sieves, containers, buckets, etc.	33	100%	0%	0%	16	75%	25%	0%	23	90%	10%	0%
2c	Consideration of the environmental conditions in the working programme	89	91%	3%	6%	89	72%	14%	14%	89	83%	8%	9%
2d	Reduction of the impact of blastings	50	50%	50%	0%	48	22%	14%	64%	48	25%	19%	56%
2e	Improvement of the levels demanded by legislation on controlled noise levels.	17	100%	0%	0%	19	50%	33%	17%	18	67%	22%	11%
2f	Use of modern machinery	91	15%	31%	54%	95	10%	33%	57%	93	13%	32%	55%

Chart No. 18

Water discharge

GOOD PRACTICE		I	GOAL (DEGREE OF IMPLEMENTATION)		
			1	2	3
3a	Use of portable waste water treatment plants or prefabricated, recoverable septic tank for sanitary water treatments.	3	They are installed, at least, in the effluent of more flow.	At least 50% of the discharge generator points installed.	Idem with elements recovered from other works.
3b	Effluent decanting pools with or without use of additives in effluent discharges and process waters.	2	Which control suspended solids and fats.	As well as pH.	Also that the effluent has no colouring.
3c	Automated treatment of the pH of basic effluents.	3	Neutralisation with HCl, H_2SO_4 o CO_2 in at least one discharge point.	Idem in 50% or at least in two different discharges.	Idem in 100 % or at least in three discharge points.
3d	Improvement of the levels demanded by legislation or licence for discharge in controlled parameters.	3	Systematic obtaining of better pollution levels than those demanded in more than 5% of all the controlled parameters	Idem in more than 15%, or in more than 30% in half of the controlled parameters	Idem in more than 30% on all controlled parameters.
3e	Reuse of the wash water of the concrete tanks cleaning	3	Re-use at worksite for spraying roads	Re-use at worksite for subsequent washing of tanks	Re-use at concrete plant.

Chart No. 19

GOOD PRACTICE		BUILDING				CIVIL WORKS				FCCCO TOTAL			
		%	1	2	3	%	1	2	3	%	1	2	3
3a	Use of portable waste water treatment plants or prefabricated, recoverable septic tank for sanitary water treatments.	56	33%	67%	0%	79	47%	42%	11%	74	45%	46%	9%
3b	Effluent decanting pools with or without use of additives in effluent discharges and process waters.	38	67%	0%	33%	75	37%	42%	21%	69	39%	39%	22%
3c	Automated treatment of the pH of basic effluents.	0	-	-	-	48	26%	7%	67%	41	26%	7%	67%
3d	Improvement of the levels demanded by legislation or licence for discharge in controlled parameters.	0	-	-	-	22	60%	40%	0%	18	60%	40%	0%
3e	Reuse of the wash water of the concrete tanks cleaning	81	14%	5%	81%	62	32%	4%	64%	72	21%	4%	75%

Chart No. 20

Discharge of waste waters

Type of discharge	Volume (m^3)
Total discharge	**3,545,701.01**
According to nature of the discharge	
■ Sanitary water	310,997.70
■ Process water	3,234,703.31
According to destination of discharge	
■ Discharge of sewage to the Public Water Works	2,697,703.62
■ Discharge of sewage to the Maritime-Terrestral Public Domain	729,221.22
■ Discharge to the sewage network	94,270.14
■ Discharge to sealed septic tank	24,506.02
Recycled or neutralised water at the works	**46,248.27**
Treated water	**529,928.27**

Chart No. 21

Most significant accidental spillages

Type of discharge	Nº	Volume (m^3)
Unsuitable or uncontrolled pollution or alteration of the soil	40	3.92
Unsuitable, uncontrolled or accidental discharges	62	6.08
Total	**102**	**10.00**

Chart No. 22

Water resources affected by significant discharges

Type of impact	No. of works
Significant discharges at natural protected areas	11
Significant discharges at natural coastline	21
Total	**26**

Chart No. 23

Use, contamination or loss of soils

GOOD PRACTICE		I	GOAL (DEGREE OF IMPLEMENTATION)		
			1	2	3
4a	Restoration of areas affected by the worksite facilities.	2	Cleaning and removal of foreign materials in the environment, or useless later, with written and/or graphic planning of the actions.	Soil decompression and morphological adaptation to the environment are performed.	Same but adding plantations and ornamental elements integrated in the resulting or pre-existing environment.
4b	Restriction of access areas.	2	There is written or graphic planning of access routes which are respected in the whole worksite.	Same, but including physical signalling which limits "in situ".	Same, but restricting the access routes to those already existing.
4c	Restriction of occupied areas.	1	There is written/graphic documentation of the areas that machinery and personnel can occupy.	There is also physical restriction or signalling of these areas.	These areas are restricted to the worksite.
4d	Prevention of accidental discharges.	2	There are physical defences and/or dissuasive posters on the perimeter of the hazardous substances or hazardous waste storage tanks, in order to prevent unwanted access and prevent collisions.	There is additional protection of the supply zone for the hazardous substances or hazardous waste storage tanks.	Furthermore, there are platforms or protected areas for handling or maintenance operations to be carried out at the worksite or location.

Chart No. 24

GOOD PRACTICE		BUILDING				CIVIL WORKS				FCCCO TOTAL			
		%	1	2	3	%	1	2	3	%	1	2	3
4a	Restoration of areas affected by the worksite facilities.	98	70%	19%	11%	99	42%	30%	28%	99	57%	24%	19%
4b	Restriction of access areas.	96	24%	53%	23%	96	18%	54%	28%	96	21%	53%	26%
4c	Restriction of occupied areas.	95	25%	48%	27%	96	16%	48%	36%	96	20%	49%	31%
4d	Prevention of accidental discharges.	94	36%	57%	7%	96	28%	50%	22%	95	32%	54%	14%

Chart No. 25

Use of natural resources

GOOD PRACTICE		I	GOAL (DEGREE OF IMPLEMENTATION)		
			1	2	3
5a	Re-use of inerts from other works.	3	More than 1% of all inerts (landfill).	More than 5%.	More than 15%.
5b	Use of recoverable elements in works processes such as removable walls (traditionally of concrete for later demolition) in aggregate crushing plants, etc.	2	Use of any system at least in 50% of cases possible when carrying out an activity.	Idem in 2 or more activities.	Idem in 5 or more activities.
5c	Reduction of borrow pits with respect to volume expected during project.	3	Reduction greater than 5%.	More than 15%.	More than 30%.
5d	Re-use of effluents and process waste waters	2	More than 15%.	More than 30%.	More than 60%.
5e	Re-use of topsoil removed	2	Separation of topsoil in horizontal layers of at least 2 and a half metres in height	In addition, turning of the topsoil gathered for more than six months	In addition, the sewing or fertilising of the stockpiled topsoil.
5f	Use of elements recovered from other worksites, such as portable sewage treatment plants, containers, etc.	2	Use of 1 element.	Use of up to 3 elements.	Use of more than 3 elements.
5g	Use of recycled water for spraying, provided it complies with the required quality conditions.	2	More than 30% of water used for spraying is recycled water from same works.	More than 80% of water used for spraying is recycled water from same works.	Recycled water is used from external sources.
5h	Use of renewable energy.	3	Some source of renewable energy is used (photovoltaic solar panels, thermal solar panels, biomass boilers, etc.) for the self-sufficiency of the worksite offices.	Some source of renewable energy is used (photovoltaic solar panels, thermal solar panels, biomass boilers, etc.) for some activities of the construction process.	The two previous.

Chart No. 26

GOOD PRACTICE		BUILDING				CIVIL WORKS				FCCCO TOTAL			
		%	1	2	3	%	1	2	3	%	1	2	3
5a	Re-use of inerts from other works.	63	50%	20%	30%	65	32%	25%	43%	64	40%	23%	37%
5b	Use of recoverable elements in works processes such as removable walls (traditionally of concrete for later demolition) in aggregate crushing installations, etc.	30	100%	0%	0%	31	100%	0%	0%	31	100%	0%	0%
5c	Reduction of borrow pits with respect to volume expected during project.	76	68%	14%	18%	83	57%	22%	21%	79	63%	18%	19%
5d	Re-use of effluents and process waste waters	11	100%	0%	0%	42	46%	15%	39%	35	50%	14%	36%
5e	Re-use of topsoil removed.	54	93%	7%	0%	91	66%	22%	12%	83	69%	20%	11%
5f	Use of elements recovered from other works, such as portable sewage treatment plants, containers, etc.	77	66%	17%	17%	64	48%	9%	43%	71	60%	14%	26%
5g	Use of recycled water for spraying, provided it complies with the required quality conditions.	0	-	-	-	73	62%	13%	25%	62	62%	13%	25%
5h	Use of renewable energy.	0	-	-	-	0	-	-	-	0	-	-	-

Chart No. 27

Consumption of resources

Resource consumed	Consumption
Raw materials and materials	
Asphalt agglomerate	1,773,002 t
Concrete	3,424,427 m³
Steel	31,083 t
Topsoil	1,087,122 m³
Paint, solvents, stripping substances, concrete curing liquids, accelerators, fluidifiers, antifreeze and epoxy resins	253,244 m³
Other harmful and hazardous substances	6,254 m³
Resources from valuation of inert waste	**7,151,125 m³**
Surplus earth or rocks	7,112,591 m³
Surplus clean rubble	38,534 m³

Chart No. 28

Power consumption

Type of power	Consumption (GJ)	%
Consumption of electrical power	54,087	10.86
Consumption of fuel-oil	51,128	10.27
Consumption of natural gas	2,876	0.58
Consumption of gasoil A	123,761	24.86
Consumption of gasoil B	169,908	34.13
Consumption of gasoil C	74,147	14.89
Consumption of petroleum	21,942	4.41
TOTAL	**497,848**	**100.00**

Chart No. 29

Consumption of water by source

Origin of water consumed	Consumption (m³)	%
Surface water	2,250,338	80.87
Underground water	163,152	5.86
Water from water supply network	369,346	13.27
TOTAL	**2,782,836**	**100.00**

Chart No. 30

Waste production

WASTE PRODUCED	Quantity Predicted	Acutal Quantity
HAZARDOUS WASTE (kg.)	**296,077**	**2,489,870**
Empty containers (kg.)	**59,658**	**53,472**
15 01 10 Empty packaging containing residues of DS or contaminated by DS	7,791	12,694
15 01 10 Empty plastic packaging containing residues of DS or contaminated by DS	30,382	15,851
15 01 10 Empty metal packaging containing residues of DS or contaminated by DS	21,485	24,927
Solid hazardous waste (kg.)	**186,389**	**2,234,956**
15 02 02 Absorbents and wiping cloths contaminated by DS	4,381	25,342
16 01 07 Oil filters	3,014	3,527
16 01 09 Components containing PCBs	0	0
16 02 13 Discarded electrical and electronic equipment containing hazardous components	0	0
16 05 04 Gases in pressure containers containing DS	10,977	14,803
16 06 01 Lead batteries	3,415	1,599
16 06 02 Ni-Cd batteries	573	2,144
16 06 03 Mercury- containing batteries	197	419
17 01 06 Mixtures of, or separate fractions of concrete, bricks, tiles and ceramics containing DS	100	304.630
17 02 04 Glass, plastic and wood containing or contaminated by DS	1,127	2,164
17 05 03 Soil and stones containing DS	121,608	1,702,976
17 06 01 Building materials containing asbestos	1,998	6,940
17 06 05 Other construction and demolition wastes (including mixed waste) containing DS	37,247	103,432
17 09 03 Fluorescent tubes and other mercury-containing waste	1,659	66,755
20 01 21 Absorbents and wiping cloths contaminated by DS	94	224
20 01 31 Oil filters	0	0
Used oil (kg.)	**29,064**	**82,775**
12 01 12 Spent waxes and fats	7	194
13 01 13 Hydraulic oils	9,767	2,923
13 02 05 Mineral-based chlorinated engine, gear and lubricating oil	9,040	11,824
13 02 08 Motor, synthetic insulating and heat transmission oils.	10,121	61,335
13 03 10 Other insulating and heat transmission oils	129	6,500
Liquid hazardous waste (kg)	**20,966**	**118,667**
08 01 11 Waste paint and varnish waste containing organic solvents or other DS	595	1,110
08 01 17 wastes from paint or varnish removal containing organic solvents or other DS	11	32
08 01 19 Aqueous suspensions containing paint or varnish containing organic solvents or other DS	11	391
08 04 09 waste adhesives and sealants containing organic solvents or other DS	171	850
08 04 15 Aqueous liquid waste containing adhesives or sealants containing organic solvents or other DS	541	2,601
12 01 09 Machining coolant, emulsions and solvents containing halogen	0	0
13 07 03 Fuels (including mixtures)	12,121	11,037
14 06 03 Solvents and solvent mixtures	622	1,555
16 01 13 Brake fluids	0	0
16 01 14 Antifreeze fluids containing DS	0	0
16 01 21 Release agents, curing liquids, plasticizers, liquidisers	6,879	13,136
16 05 06 Laboratory chemicals consisting of or containing DS	14	2,301
16 07 08 Wastes containing oil	0	85.653
NON-HAZARDOUS WASTE (kg)	**6.533.658.805**	**7.809.196.377**
Inert waste (m^3)	**6.506.093**	**7.705.088**
17 01 01 Concrete	2.672.768	114.743
17 01 02 Bricks	557	309
17 01 03 Tiles and ceramics	1.192	144
17 01 07 Mixtures of concrete, bricks, tiles and ceramics not containing DS	1.179.930	2.034.452
17 05 04 Soil and stones not containing DS	2.651.646	5.555.440
Urban waste (kg)	**990.563**	**3.786.592**
20 02 01 Compostable waste	220,201	1,652,163
20 03 01 Mixed municipal waste	770,362	2,134,429
Other non-hazardous waste (kg)	**26,575,242**	**100,321,785**
01 05 04 Fresh-water drilling muds and wastes	47,839	370,029
08 03 18 Waste printing toner	819	1,782
10 11 03 Fiberglass wastes	0	3,959
12 01 13 Welding wastes	0	0
15 01 06 Non-hazardous mixed packaging	960	3,517
16 01 03 End of life tyres	127	31,529
16 06 04 Alkaline batteries (except mercury- containing batteries)	240	1,145
17 02 01 Wood	2,445,259	5,372,500
17 01 02 Glass	1,018	20,130
17 02 03 Plastic	526,402	728,722
17 03 02 Bituminous mixtures not containing coal tar	2,721,979	2,042,585
17 04 07 Mixed metals	750,409	2,953,305
17 08 02 gypsum-based construction materials other than those mentioned in 17 08 01	8,250,647	23,477,053
17 09 04 Mixed non-hazardous construction and demolition wastes	11,128,950	63,159,897
19 08 05 Sludges from treatment of urban waste water.	439,888	1,400,612
20 01 01 Paper and cardboard	260,689	755,009
20 01 32 Expired medicines other than cytotoxic and cytostatic.	15	11

Chart No. 31

RECYCLED/USED MATERIALS	Quantity predicted	Actual Quantity
Surplus soil and stones		
■ Disposed in landfill (m^3)	7,469,044	7,374,035
■ Used in the same project (compensation/excavation/fill) (m^3)	9,962,846	6,755,577
■ Used from other projects (m^3)	433,392	357,014
■ Used in other projects (m^3)	746,923	2,271,333
■ Obtained from borrow-pit (m^3)	4,925,582	3,692,463
■ Total excavation (m^3)	22,934,914	17,915,651
■ Total fill (m^3)	16,574,985	82,630,597
Clean rubble (concrete, bricks, tiles and ceramic, other)		
■ Disposed in landfill (m^3)	781,321	355,475
■ Used in the same project (m^3)	38,108	31,854
■ Used from other projects (m^3)	15,696	6,679
■ Used in other projects (m^3)	3,633	2,037
■ Delivered to a recovery installation (m^3)	54,250	50,736

Chart No. 32

GOOD PRACTICE		I	GOAL (DEGREE OF IMPLEMENTATION		
			1	2	3
6a	Reduction of inerts to landfill with respect to volume predicted in the project.	3	Reduction greater than 5%.	More than 15%.	More than 30%.
6b	The construction and demolition waste is classified/separated for individual management.	2	Construction and demolition waste are classified in one more category than those required by law.	Construction and demolition waste are classified in two more categories than those required by law.	All construction and demolition waste are classified and valuated.
6c	Changes in the design or the construction system relating to the use of materials generating hazardous waste such as fibre cement, stripping substances, additives, resins, varnishes, paints, etc., in order to generate less or non-hazardous waste	3	Stop generation of one hazardous waste predicted in at least one activity/ works unit, e.g. applying water paints instead of paints with organic solvents.	Idem in three or more activities.	Idem in five or more
6d	Reduction of packaging waste through practices such as requesting materials in returnable packaging to the supplier, re-use of contaminated containers, reception of large volume elements or bulk goods usually supplied packaged, etc.	2	Applied to two or more materials.	Idem in 5 or more.	Idem in 10 or more.
6e	Excavation surplus management	2	More than 1% to other worksite or restoration of degraded area.	More than 30 %.	More than 50 %.
6f	Valuation of rubble	2	Re-use or recycling in other worksites or in external plant	Re-use at own worksites.	Recycling of stone by installing a plant at the worksite
6g	Use of media to reduce the volume of waste (paper, cardboard, metal, etc.)	1	Applied to one type of waste.	Applied to two different types of waste.	Applied to three or more different types of waste.

Chart No. 33

GOOD PRACTICE		BUILDING				CIVIL WORKS				FCCCO TOTAL			
		%	1	2	3	%	1	2	3	%	1	2	3
6a	Reduction of inerts to landfill with respect to volume predicted in the project.	91	60%	19%	21%	87	59%	19%	22%	89	59%	19%	22%
6b	The construction and demolition waste is classified/ separated for individual management.	87	42%	51%	7%	87	52%	42%	6%	87	46%	47%	7%
6c	Changes in the design or the construction system relating to the use of materials generating hazardous waste such as fibre cement, stripping substances, additives, resins, varnishes, paints, etc., in order to generate less or non-hazardous waste	38	78%	22%	0%	15	100%	0%	0%	27	83%	17%	0%
6d	Reduction of packaging waste through practices such as requesting materials with returnable packaging to the supplier, re-use of contaminated containers, reception of large volume elements or bulk goods usually supplied packaged, etc.	65	74%	26%	0%	57	83%	17%	0%	61	77%	23%	0%
6e	Excavation surplus management	67	34%	28%	38%	69	48%	27%	25%	68	41%	27%	32%
6f	Valuation of rubble	55	82%	10%	8%	64	34%	47%	19%	59	60%	27%	13%
6g	Use of media to reduce the volume of waste (paper, cardboard, metal, etc.)	33	100%	0%	0%	45	40%	60%	0%	40	62%	38%	0%

Chart No. 34

Regional planning

GOOD PRACTICE		I	GOAL (DEGREE OF IMPLEMENTATION)		
			1	2	3
7a	Physical protection of specimens	1	Protect all individual specimens affected by the works.	Idem for all the specimens	Care and maintenance work is also carried out.
7b	Transplants	1	Transplanting of any individual specimen affected by the works.	Idem for all the individual specimens	Moreover the success of the transplants is higher than 80%.
7c	Adequacy of planning of the works to life cycles of most valuable species.	2	Improvement of expectations in the project.	The project did not provide it but it is	Tracking the individuals affected for longer than six months.
7d	Transfer of habitats or individuals	1	Some transfer carried out	Perform a generalised transfer	Tracking of the individuals affected for longer than six months.
7e	Use of methods to prevent dirt at the entrance and exit to the works	2	Systematic sweeping of entrances and exits	Cleaning of all lorry wheels before driven on public roads	Use of any fixed device for the previous practice (water ponds at the exit, sprinklers, etc).
7f	Occupation of pavements and roads	2	Protection measures adopted (fencing, signalling, separation of pavement /road etc.).	Alternative access routes also enabled.	Reduction of maximum authorised occupation time or space

Chart No. 35

GOOD PRACTICE		BUILDING				CIVIL WORKS				FCCCO TOTAL			
		%	1	2	3	%	1	2	3	%	1	2	3
7a	Physical protection of vegetation specimens at the works.	62	65%	18%	17%	82	65%	32%	3%	75	65%	28%	7%
7b	Transplants	59	53%	26%	21%	77	53%	41%	6%	71	53%	37%	10%
7c	Adequacy of planning of the works to life cycles of most valuable species.	20	100%	0%	0%	40	70%	12%	18%	38	72%	11%	17%
7d	Transfer of habitats or individuals	25	100%	0%	0%	35	64%	18%	18%	34	66%	17%	17%
7e	Use of methods to prevent dirt at the entrance and exit to the works	95	77%	19%	4%	94	76%	19%	5%	94	77%	19%	4%
7f	Occupation of pavements and roads	93	72%	18%	10%	87	30%	53%	17%	91	55%	32%	13%

Chart No. 36

Lands surrounding or inside protected natural areas or areas of high, unprotected biodiversity

Type of impact	Nº Works	Surface area (m²)
Location in natural or protected settings	12	5,244,401
Location in area with landscape catalogued as relevant	27	889,215
Impact on natural river bed in protected area	11	208,681
Impact on vegetation catalogued or protected	20	769,390
Impact on catalogued or protected species	16	6,487,499

Chart No. 37

Restoration and protection of lands

Protection measures	Surface area (ha)
Restoration of affected lands	35.64
Protection of sensitive areas	24.97

Chart No. 38

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